



**VAIDIO 6.0.0  
ANALYTICS GUIDE**

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## VIDEO SEARCH

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# VIDEO SEARCH — DASHBOARD

Original Snapshot | Scene ID : 6995176

2022-04-09 23:28:22  
Taipei Street

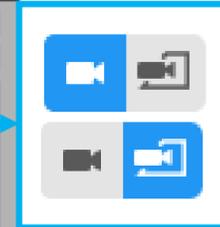
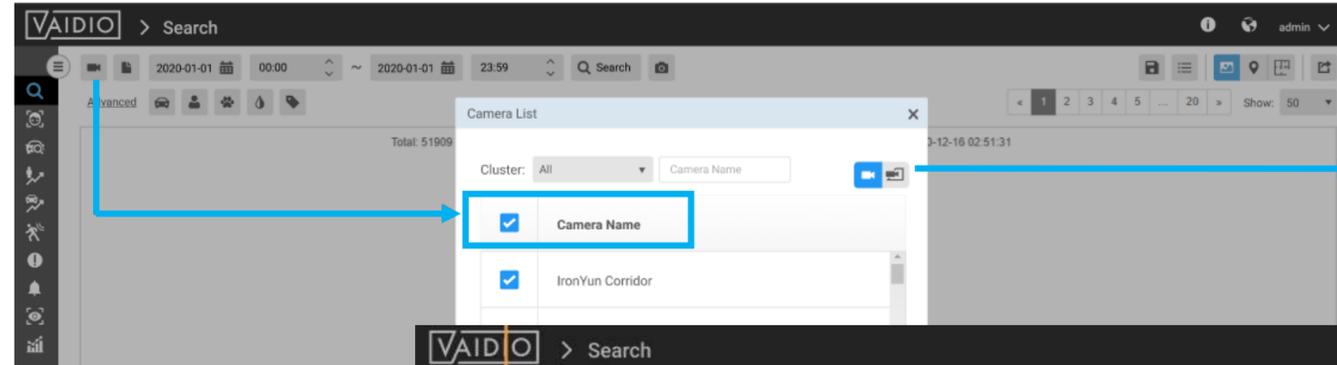
Object Type:	Person	Age:	-	Make:	-	Mask:	-
Confidence:	1.00	Gender:	-	Model:	-	PPE:	-
Color:	White, Black	FR List:	-	LPR List:	-		
Width:	128	Name:	-	License Plate:	-		
Height:	194	Emotion:	-	Speed:	-		

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
- 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

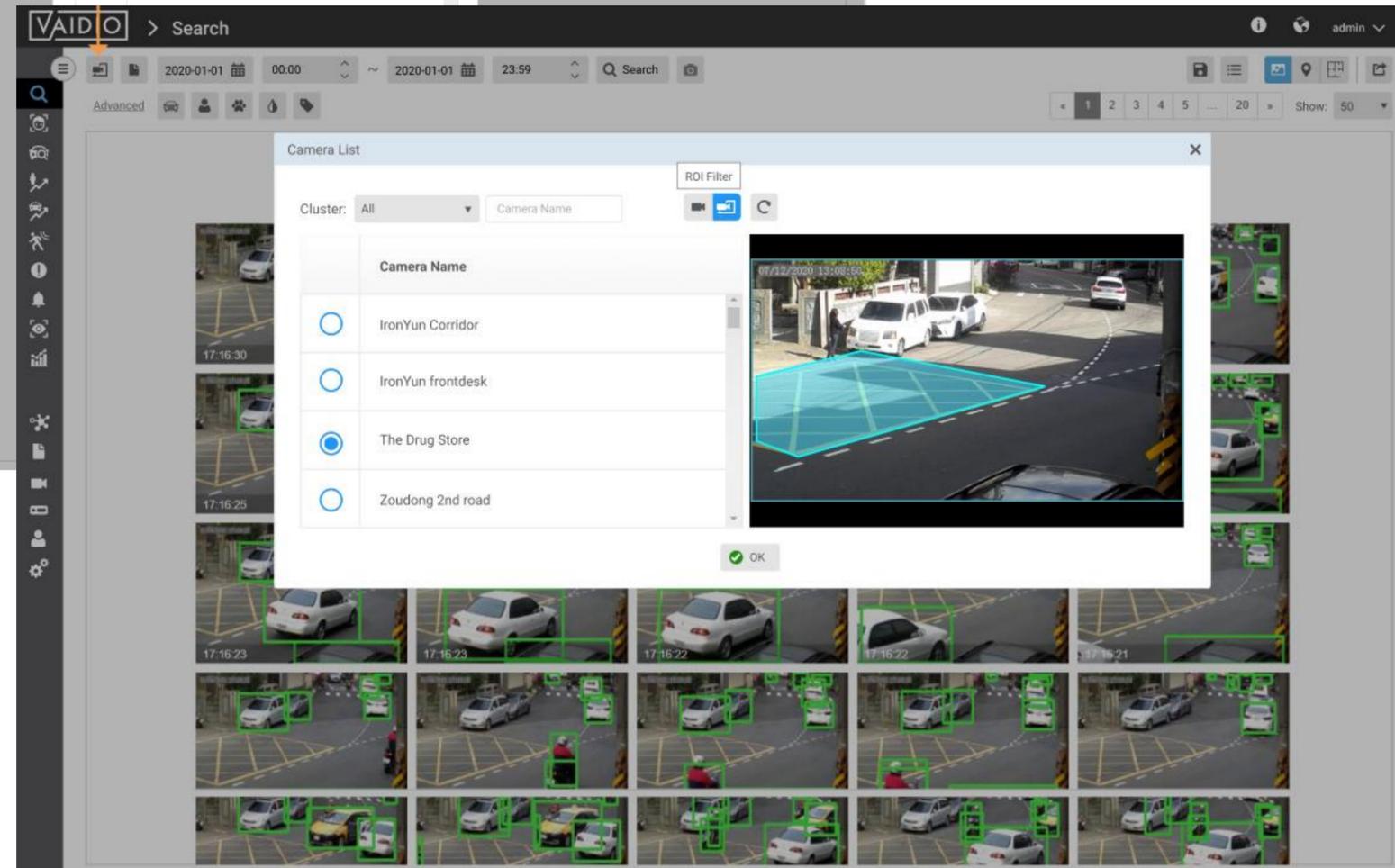


**Wide Range** (multi-camera): Regular video search to get more results

**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



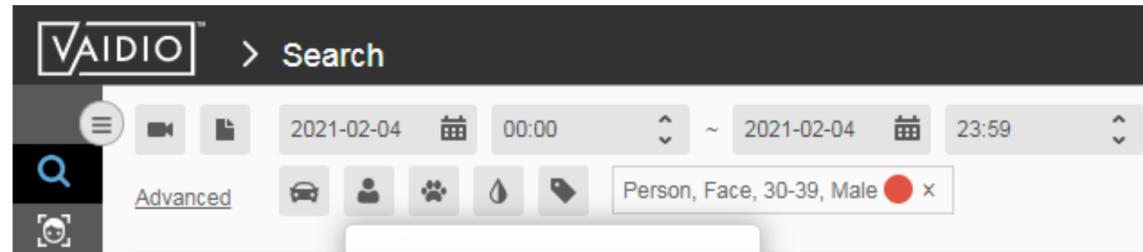
[Return to Video Search](#)

## 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 IronYun support team (or email [support@ironyun.com](mailto:support@ironyun.com)) 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

**Precondition**  Face

**Color**

**Name**

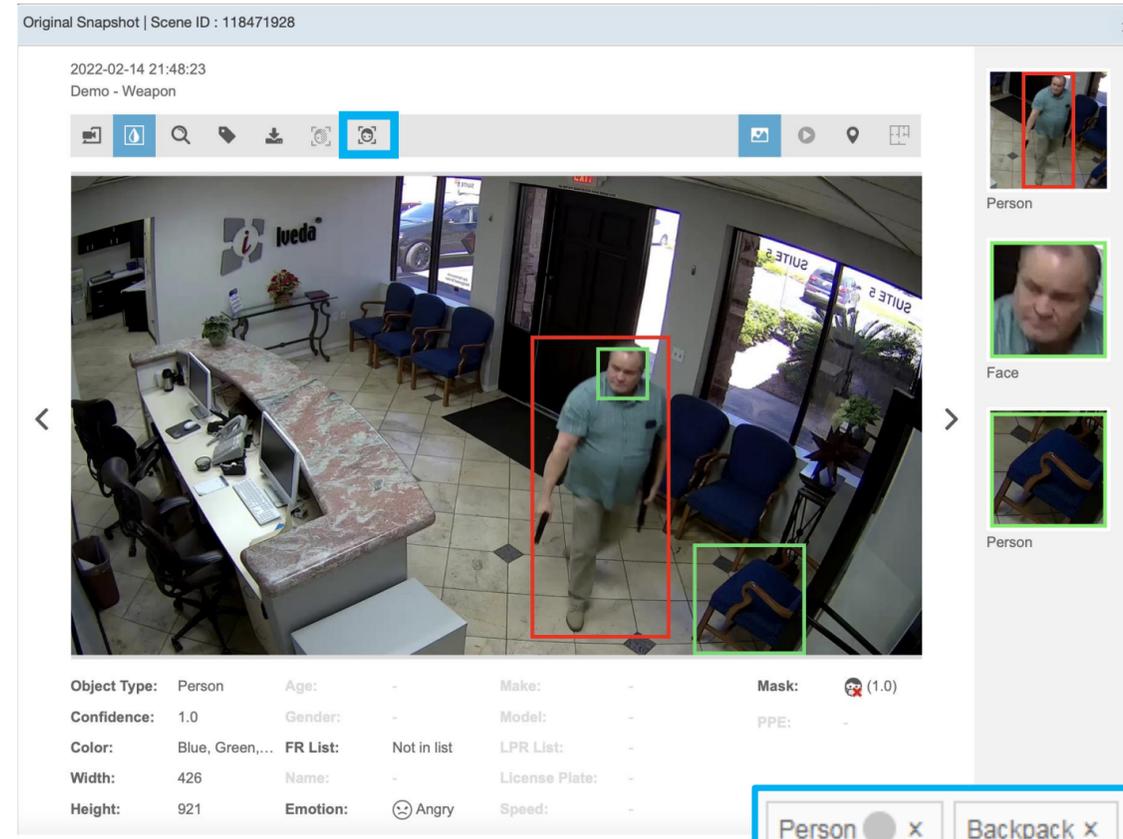
**List**

**Age**

**Gender**  
 Both  Male  Female

**PPE**

**Quantity**



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



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# VIDEO SEARCH — PERSON (CONT.)

The screenshot displays the Vaidio search interface. At the top, there's a search bar with 'Person, Anthony' entered. Below it, a filter panel is open, showing various search criteria: Precondition (Face), Color (Include/Exclude), Name (Anthony), List, Age, Gender (Both selected), and PPE. The search results show a grid of video frames with a person highlighted. A detailed view of one frame is shown on the right, with a bounding box around the person's face. Below the frame, a metadata table is visible:

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

**VAIDIO** > Search

2020-11-12 00:00 ~ 2020-11-12 23:59

Advanced  Car, BMW, AKW

- All Vehicle >
- Bicycle >
- Bus >
- Car >
- Motorcycle >
- Truck >

**Color**

Include Exclude

License Plate: AKW

List: --

Make: BMW

Model:

Quantity: 0

Cancel Add

Select the specific criteria of the target object.

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

Original Snapshot | Scene ID : 38395001

2020-07-09 10:58:36  
Zhudong 2nd Road

Original Snapshot | Scene ID : 37065721

2020-07-06 14:28:54  
Zhudong 1st Road

Object Type: Car(1.0)    Age: -    Make: BMW    PPE: -  
 Width: 547    Gender: -    Model: E46  
 Height: 366    FR List: -    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

The screenshot shows the Vaidio search interface with a list of objects and a color selection dialog. The object list includes:

- Bear
- Cat
- Cow
- Dog
- Horse
- Color

The color selection dialog includes a 'Collapse' button, a list of objects (Airplane, Backpack, Ball, Baseball\_bat, Boat, Cell\_phone, Chair, Gloves, Handbag, Kite, Knife, Laptop, Plant, Racket, Skateboard, Skis, Snowboard, Suitcase, Surfboard, Tie, Train, Umbrella), and a 'Color' section with 'Include' and 'Exclude' options, a color palette, and a 'Quantity' field set to 0. There are 'Cancel' and 'Add' buttons at the bottom.

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

The first screenshot shows a video search result for a dog in a street scene. The video is titled 'Original Snapshot | Scene ID : 38285370' and is dated '2020-07-09 05:43:32' on 'Zhudong 2nd Road'. The dog is highlighted with a red bounding box. The search results table is as follows:

Object Type:	Dog(0.7)	Age:	-	Make:	-	PPE:	-
Width:	68	Gender:	-	Model:	-		
Height:	97	FR List:	-	LPR List:	-		
Color:	Black	Name:	-	License Plate:	-		

The second screenshot shows a video search result for a dog in a street scene at night. The video is titled 'Original Snapshot | Scene ID : 38197790' and is dated '2020-07-09 00:33:45' on 'Zhudong 1st Road'. The dog is highlighted with a red bounding box. The search results table is as follows:

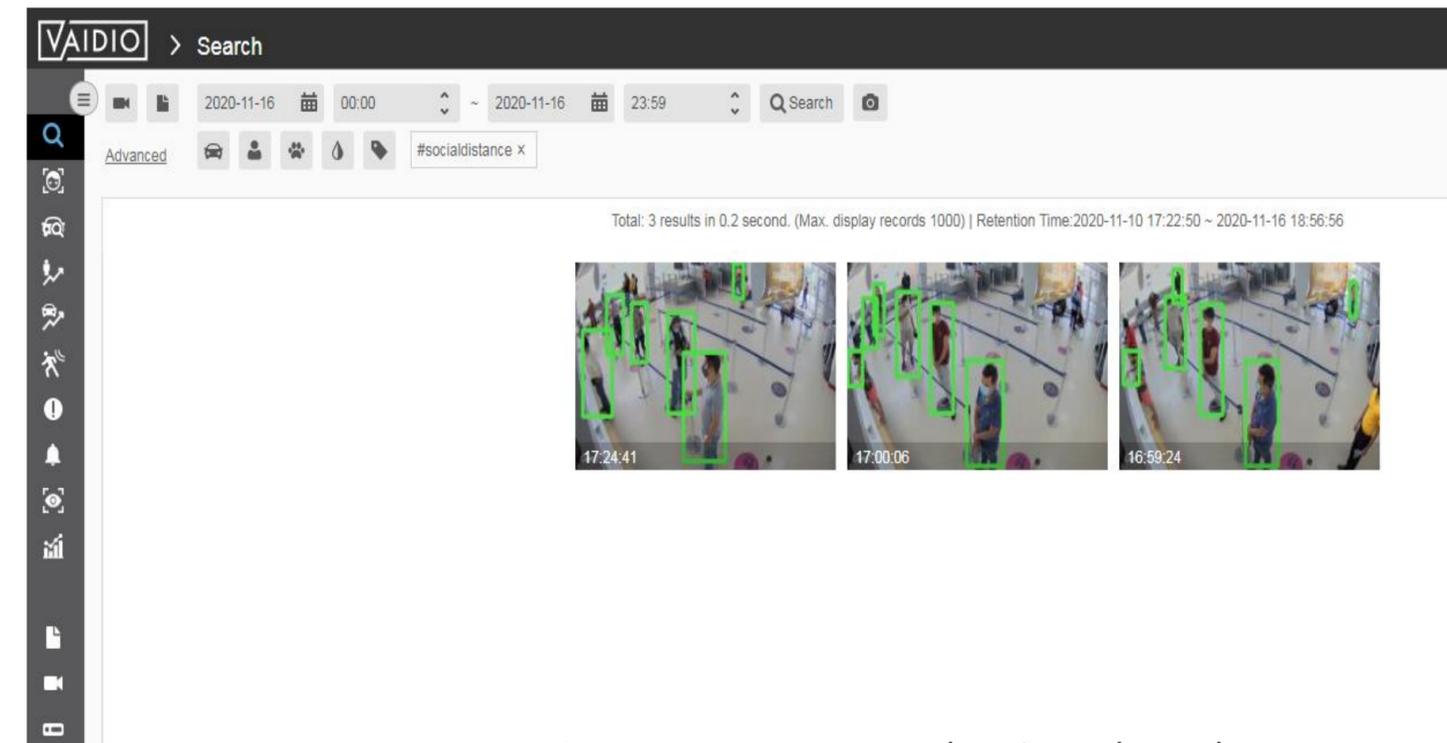
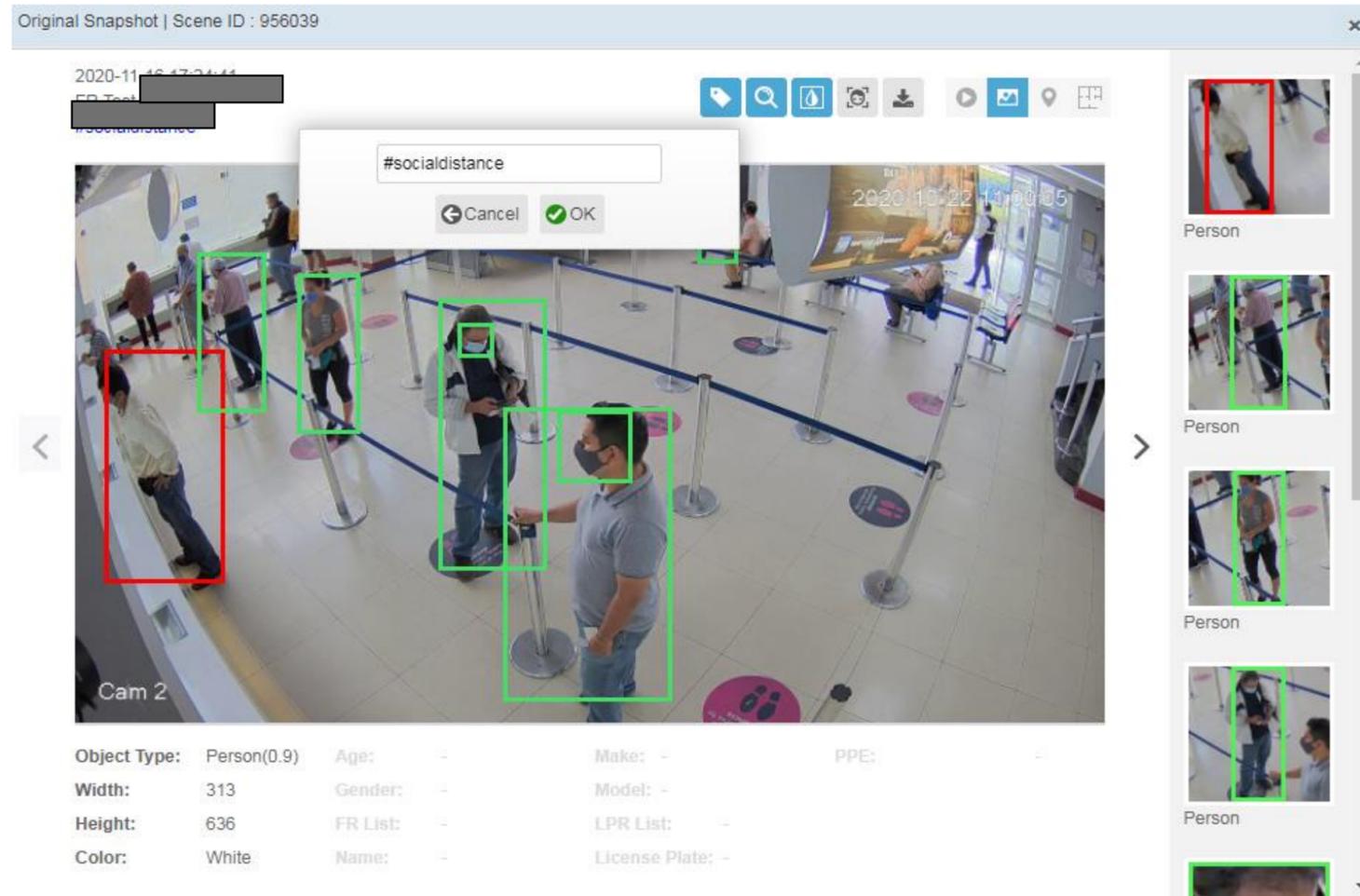
Object Type:	Dog(0.8)	Age:	-	Make:	-	PPE:	-
Width:	91	Gender:	-	Model:	-		
Height:	150	FR List:	-	LPR List:	-		
Color:	Yellow,Black	Name:	-	License Plate:	-		

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# VIDEO SEARCH — SMART TAG

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

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- [ROI Configuration](#)
- [Dashboard – Real-time Detection](#)
- [And/Or Selection](#)
- [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 region as necessary: no object is detected in the exclusion region; use this feature to exclude areas that cause false alarms, e.g., statues in 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			

Schedule

**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 ROI's** 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

Advanced

AI Model : 2 selected | AI Engines : 3 selected | Profile : ag

General ROI | FR x | Intrusion x

Object Type

AND OR

cereal >0 x

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

Schedule

Sensitivity

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

every 5 (1~30) second(s)

Cooldown Period

0 second(s). 0 ~ 3600 seconds

Suggested Value : 9 seconds

Save

No.	Draw Type	Name		
1	ROI	cereal		
2	ROI	coke		
3	ROI	pepsi		
4	ROI	cookie		

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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

2020-07-30 11:28:26  
Taipei Street Demo  
People Intrusion

2020-07-30 11:28:08  
Taipei Street Demo  
People Intrusion

Original Snapshot | Scene ID : 44793088

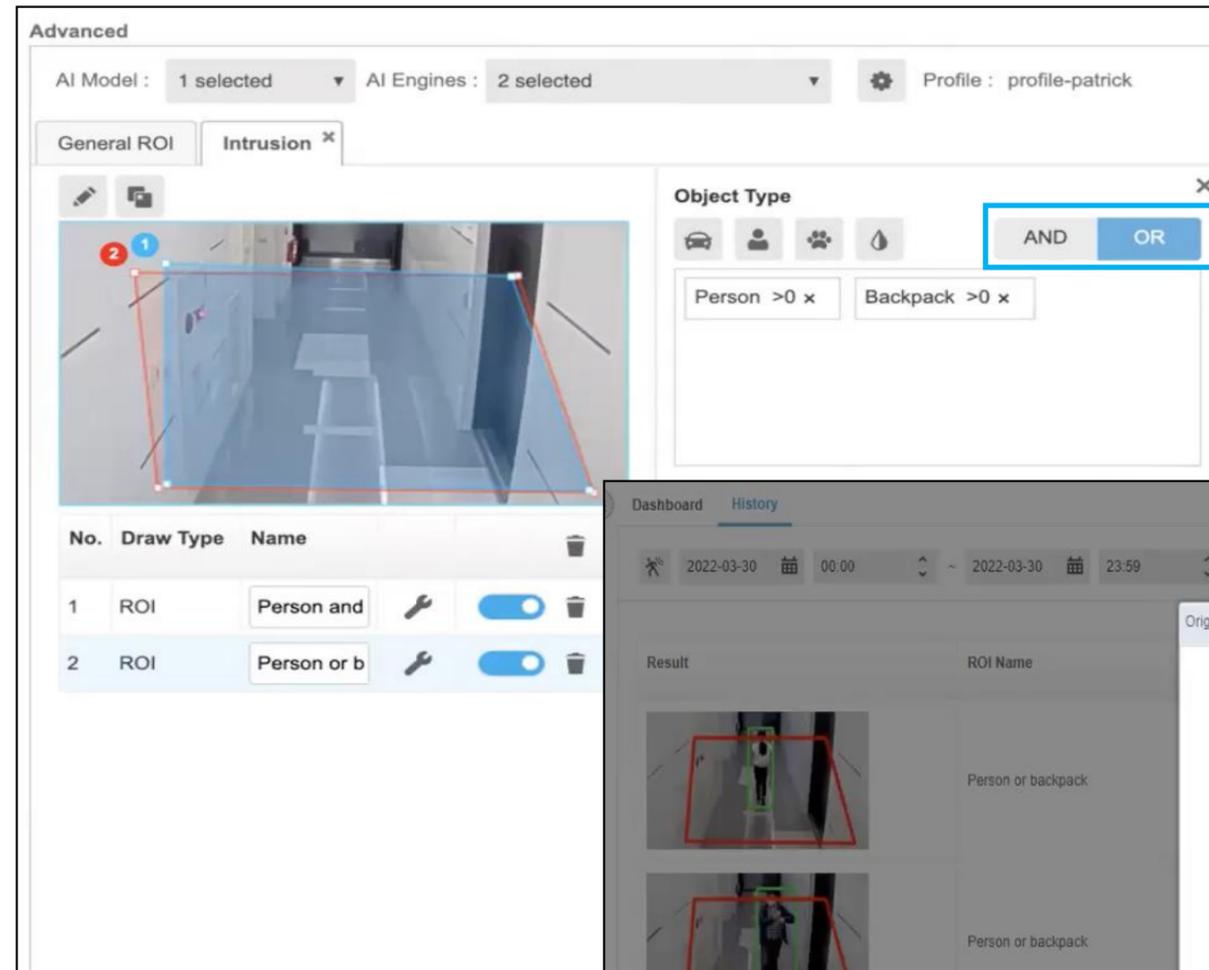
2020-07-30 11:28:24  
Taipei Street Demo

Object Type:	Person(1.0)	Age:	-	Make:	-	PPE:	-
Width:	201	Gender:	-	Model:	-		
Height:	532	FR List:	-	LPR List:	-		
Color:	White,Black	Name:	-	License Plate:	-		

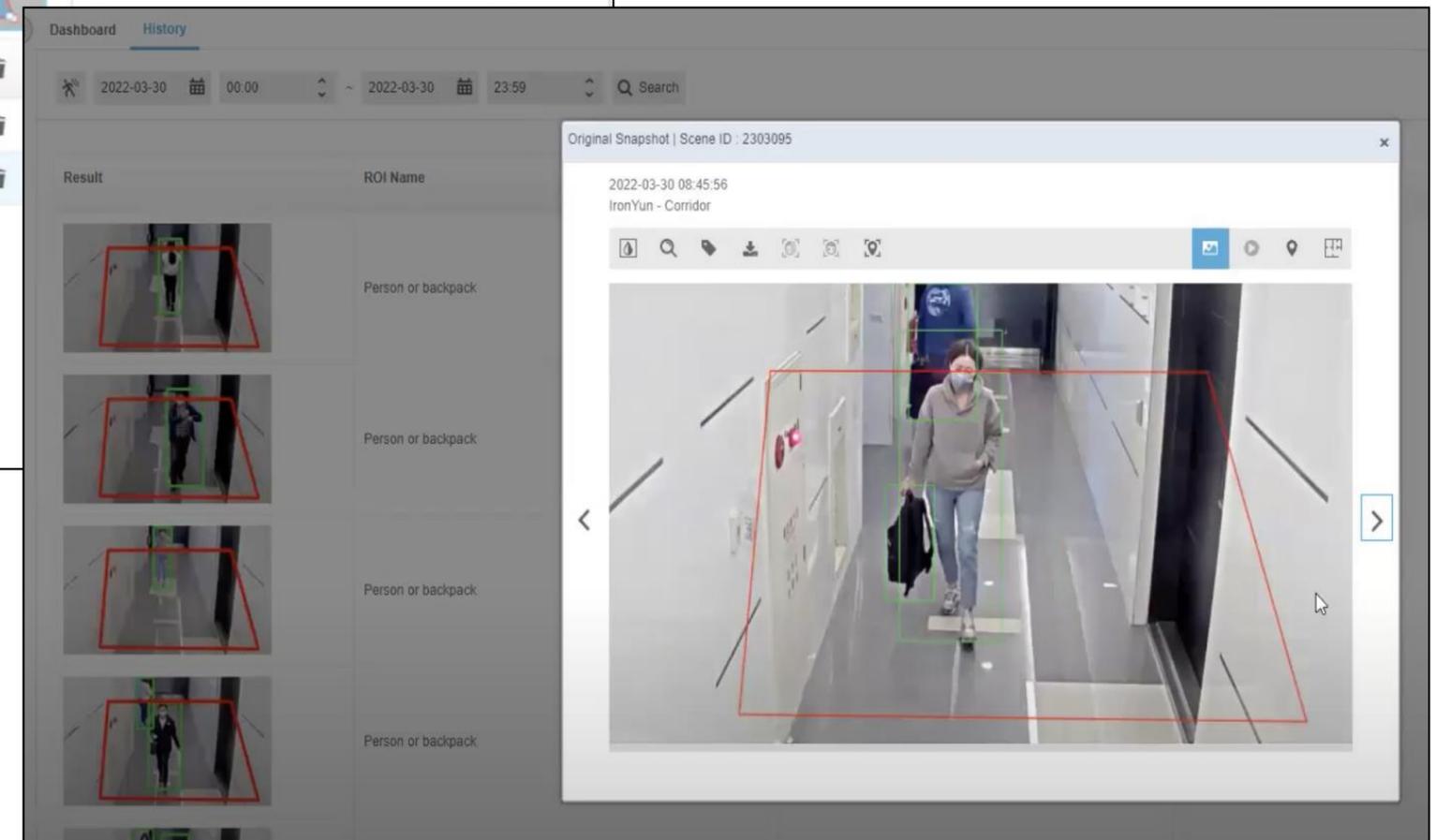
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# INTRUSION DETECTION — AND/OR SELECTION

- ❑ Select the “AND” or “OR” option where an event would be triggered when **all** or **only one** of the selected objects is detected
- ❑ 10 objects may be entered at the same time for detection. 5 objects may be entered at the same time for alert rule



Result



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# INTRUSION DETECTION – HISTORY

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

2020-11-16 00:00 ~ 2020-11-16 23:59 Search

(Max. display records: 1000)

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

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- [Camera Placement & Settings](#)
- [Create Face List](#)
- [Register a Face](#)
- [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:

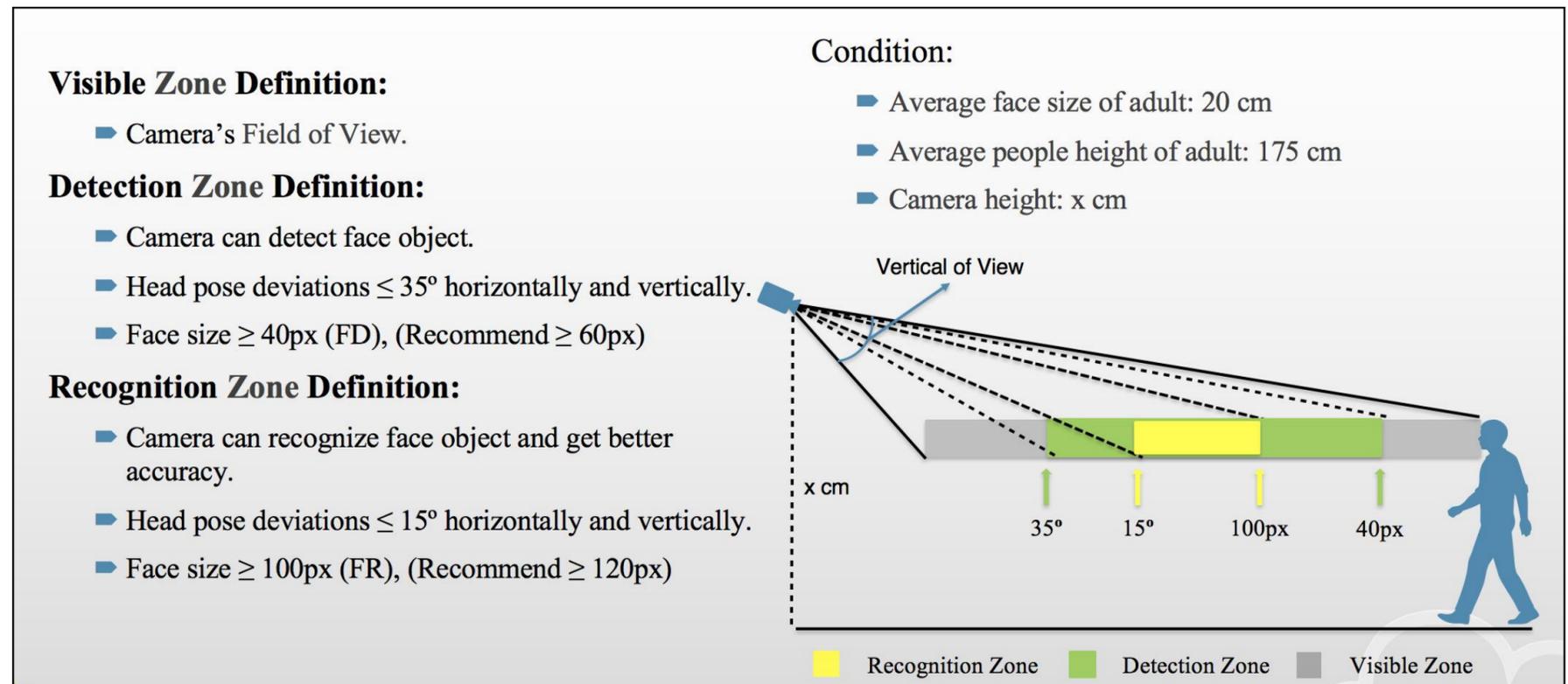
- ❑ “Face Recognition” AI Engine is enabled in Camera setting
- ❑ Face Recognition ROI (region of interest) is defined for each camera within its FoV; e.g., the entrance, to avoid wasting computing power on irrelevant areas in the FoV, increase accuracy and increase speed
- ❑ Each face should be **at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

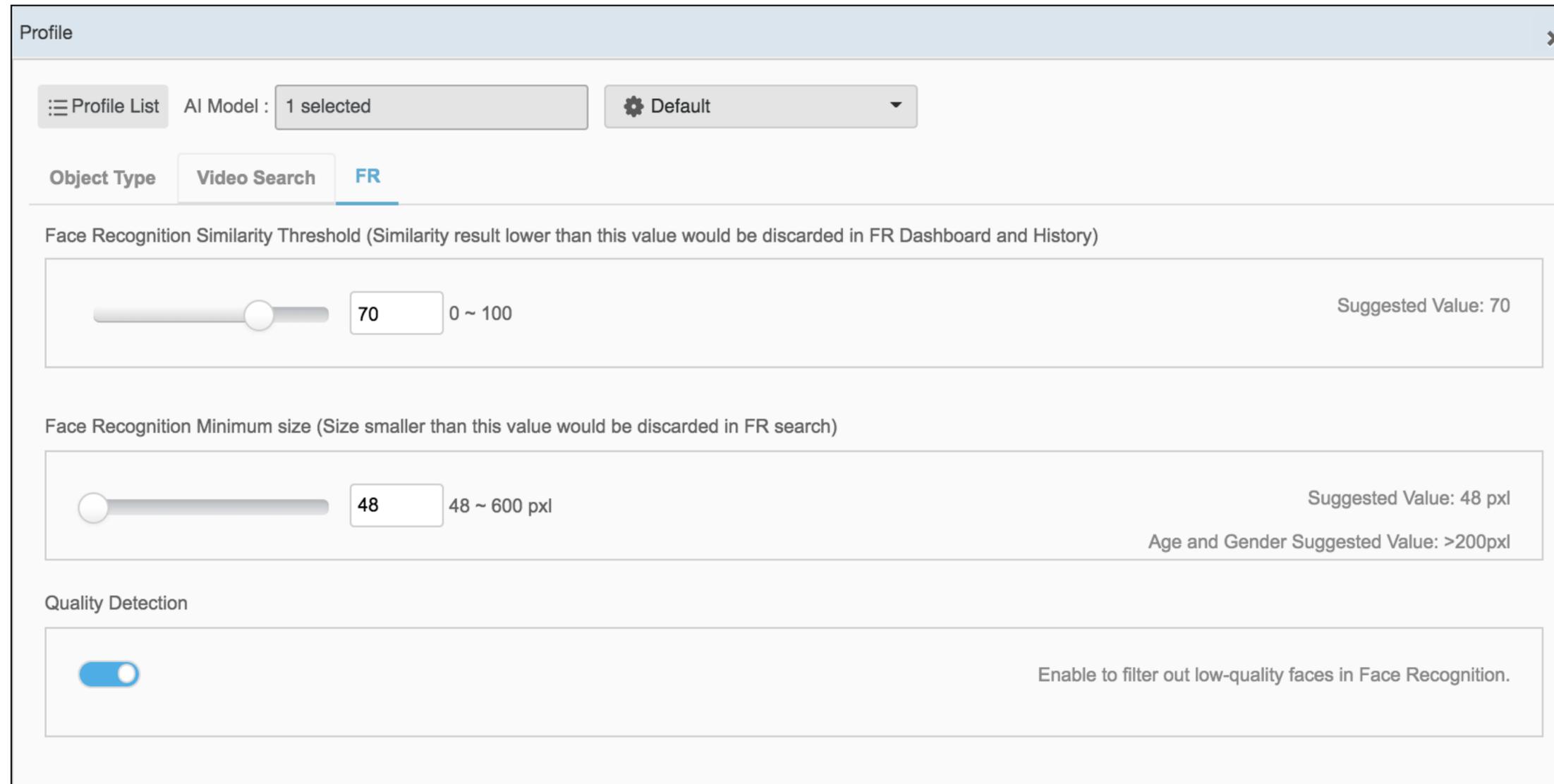
## Recommended face image to save in list:

- ❑ 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.)



Profile

Profile List AI Model : 1 selected Default

Object Type Video Search **FR**

Face Recognition Similarity Threshold (Similarity result lower than this value would be discarded in FR Dashboard and History)

70 0 ~ 100 Suggested Value: 70

Face Recognition Minimum size (Size smaller than this value would be discarded in FR search)

48 48 ~ 600 pxl Suggested Value: 48 pxl  
Age and Gender Suggested Value: >200pxl

Quality Detection

Enable to filter out low-quality faces in Face Recognition.

- 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 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 'Search' button. A sidebar on the left contains various icons. The main area displays a table of targets with columns: Face Image, Created Time, Name, List, and Birth Year. A 'List' button and an 'Add Target' button are highlighted with a blue box. A 'Create New Target' modal is open, showing a form with fields for Name, List (dropdown), Birth Year (dropdown), Gender (dropdown), and ID. It also features five image upload slots. A 'New List' modal is also open, showing a 'List Name' field. A table of existing lists is visible at the bottom, with columns for Created Time and List Name.

Created Time	List Name
2020-03-13 13:23:23	AI-Team
2020-04-21 17:06:56	大愛_TEST2
2020-04-29 15:55:26	IY
2020-06-08 11:37:18	VIP guest
2020-06-22 14:50:39	Black List

**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

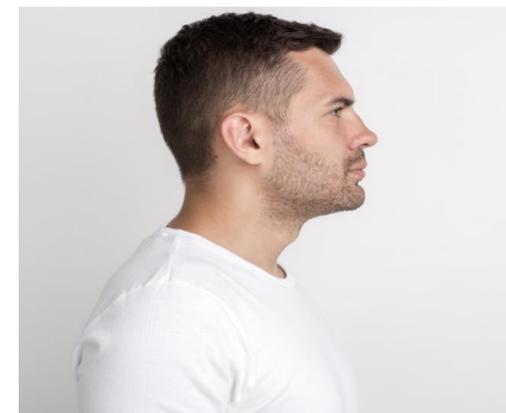
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# REGISTERING A FACE

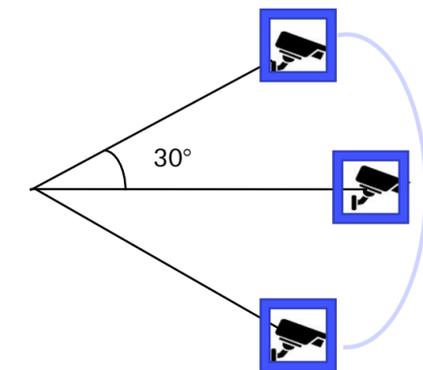
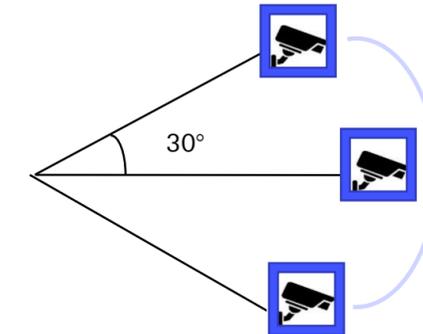
Faces may be adequately recognized with a rotation of 60° either horizontally or vertically. It is recommended that the camera should be positioned in a way that each person entering does not have a face rotation of more than 30°.



One image capturing the frontal profile of the person's face is recommended for efficient recognition. Side profiles, as well as upward & downward profiles may be added later to improve recognition accuracy.



## Horizontal & Vertical Angles



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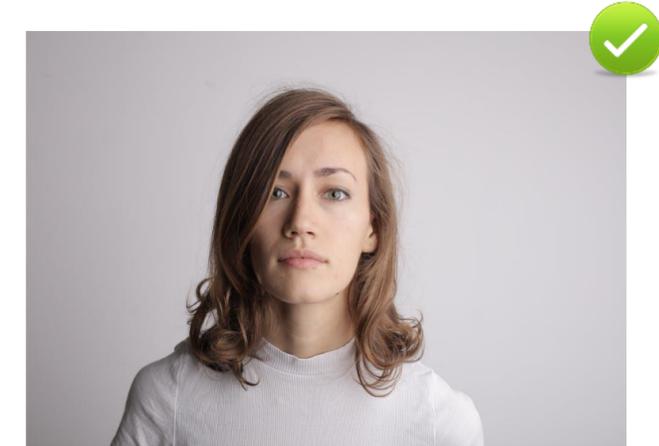
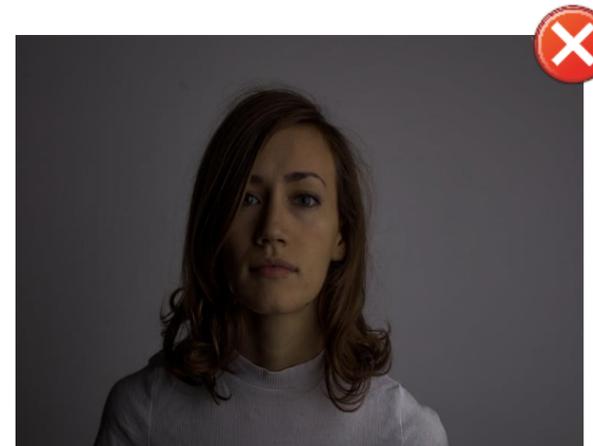
## REGISTERING A FACE (CONT.)

- 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

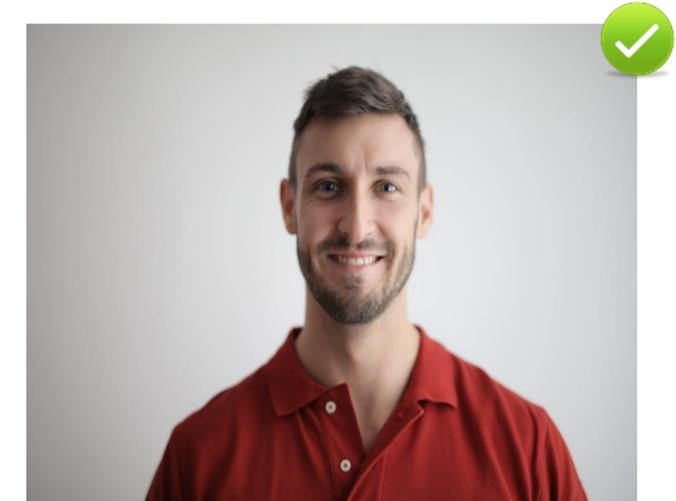
- Faces should not be poorly illuminated



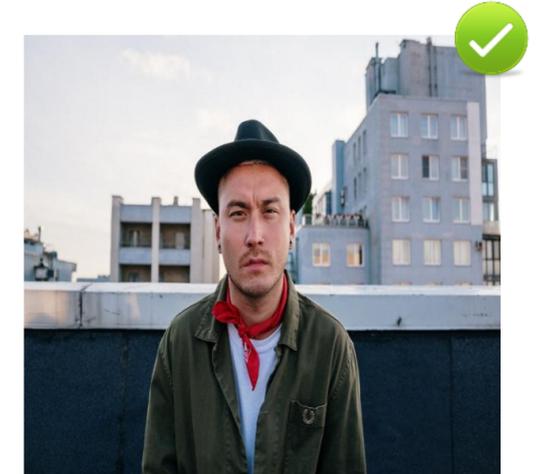
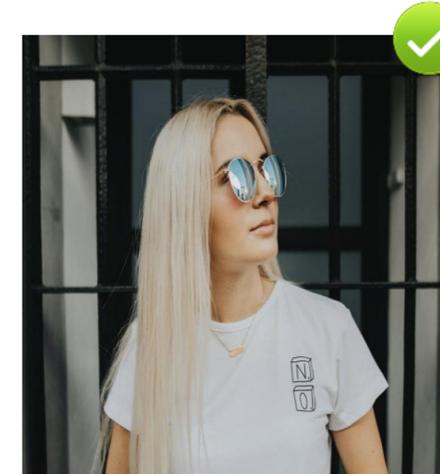
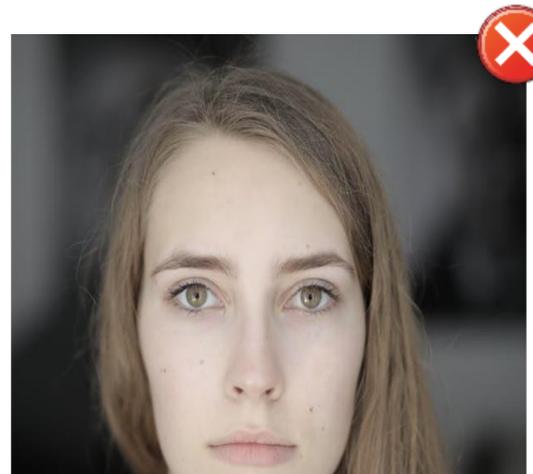
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## REGISTERING A FACE (CONT.)

- ❑ 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.

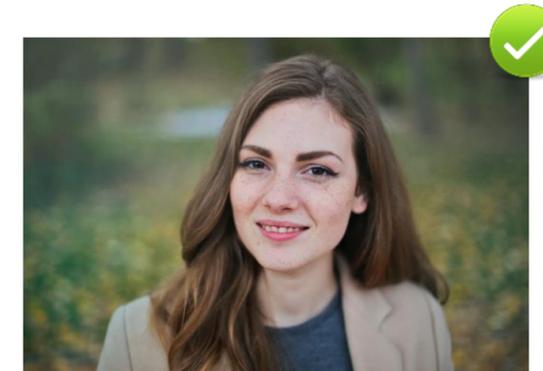
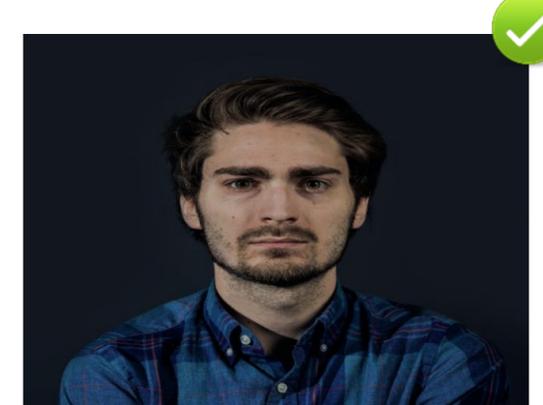
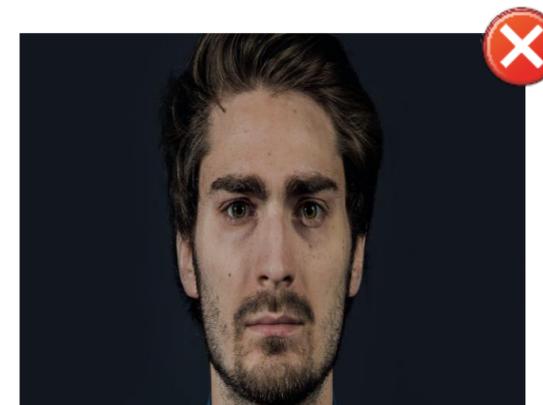
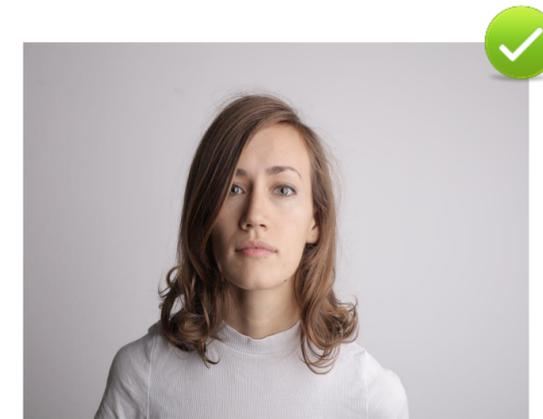


Cropped out images should be avoided

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# REGISTERING A FACE (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.

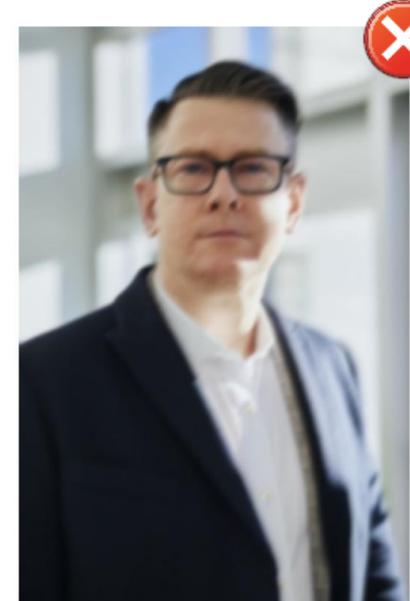


Height of the image must not be the same as the height of the face

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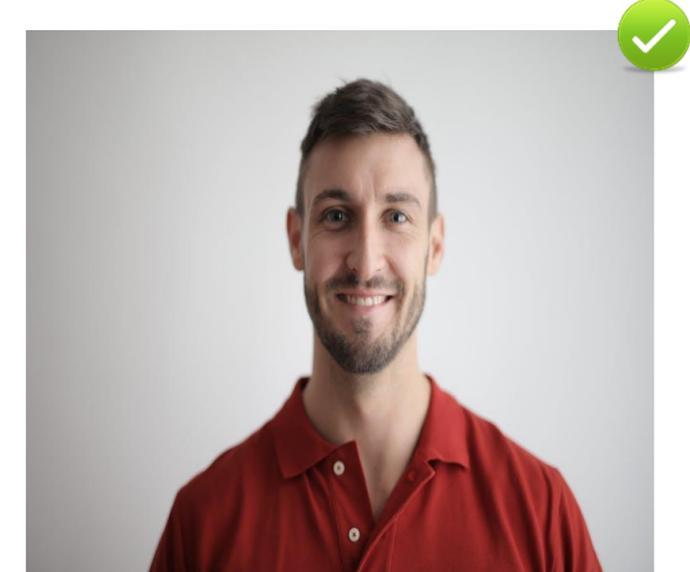
## REGISTERING A FACE (CONT.)

- Images should not be blurry



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

- Image resolution must be sufficient. It is best to add an image of the same resolution as the face image detected by the camera



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# FACE RECOGNITION — DASHBOARD

The dashboard displays a live video feed on the left with a green bounding box around a person's face. Below the feed, a table lists detected faces with their attributes and match percentages. A 'Match Targets' section shows a list of potential matches. A modal window titled 'Add to Existing Target' is open, showing a list of target faces with 'View' and '+Add' buttons.

**Annotations:**

- Click on Image icon to display the snapshot on the left
- The detected faces will appear on Face Recognition Dashboard in real time
- Click to create a new target or add the detected face to the existing target directly

Event Face	Target Face	Time	Camera Name
		2020-07-09 14:30:51	IronYun Right Front Door

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# FACE RECOGNITION — HISTORY

The screenshot displays the Vaidio Face Recognition History interface. At the top, there are navigation tabs for Dashboard, History (selected), List, and Face Search. Below these are filters for date (2020-07-08), time (00:00 to 23:59), and a similarity threshold of 70. The main area shows a video feed of a hallway with a person's face highlighted in a green box. Below the video, there are search filters for Name, List, Age, Gender, and Mask. A 'Match Targets' section shows two potential matches: Sandy-Peng (75%) and Peggy (65%). A 'Target' window is open, displaying the details for Sandy-Peng, including her name, list, birth year, gender, and ID.

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.

The 'Target' window displays the following information for the matched person, Sandy-Peng:

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

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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

15:37:18	15:35:01	15:14:31	15:11:11	14:05:20	13:51:44	12:09:46
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
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: - PPE: -  
Width: 163 Gender: Female Model: -  
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

The screenshot shows the Vaidio Face Recognition interface. At the top, there's a navigation bar with 'Dashboard', 'History', 'List', and 'Face Search' (highlighted). Below this is a search bar with 'Match Video' and 'Match List' buttons, a 'List: All' dropdown, and a 'Similarity: 70' filter. The main content area is split into two columns. The left column shows a video frame with a red bounding box around a person's face, labeled '2020-11-16' and '07.37.21.669.jpg'. Below the video is a 'Face Detected' section showing a close-up of the detected face with a red bounding box and the text '21, Female'. The right column shows a 'Match List' with three entries, each with a face image and a similarity percentage (80%, 77%, and 72%). The first entry is highlighted with a blue box, and a blue arrow points from it to a 'Target' window.

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

The 'Target' window displays five matching face images. Below the images, the following metadata is shown:

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

[Return to Face Recognition](#)

# MASK DETECTION

Event Face	Target Face	Time
75%	Sophia Description : AI Team Staff List	2021-05-21 02:36:48
Age : 34 (±5) Gender : Male	Devin List : AI-Team Description : AI Team Staff List	2021-05-21 02:36:07
Age : 38 (±5) Gender : Female	Sophia List : AI-Team Description : AI Team Staff List	2021-05-21 00:10:17
77%	Sophia List : AI-Team Description : AI Team Staff List	2021-05-21 00:10:12
72%	Sophia List : AI-Team Description : AI Team Staff List	2021-05-21 00:03:56
74%	Anthony List : AI-Team Description : AI Team Staff List	2021-05-21 00:03:56
74%	Anthony	

In 5.1.0, Mask Detection is 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.

Original Snapshot | Scene ID : 5909400

2021-05-21 00:10:17  
IronYun - Right Front Door

Object Type:	Person	Age:	30-39	Make:	- Mask: 🧢 (1.0)
Confidence:	1.0	Gender:	Female	Model:	PPE: -
Color:	Gray,White	FR List:	AI-Team	LPR List:	-
Width:	398	Name:	Sophia	License Plate:	-
Height:	644			Speed:	-

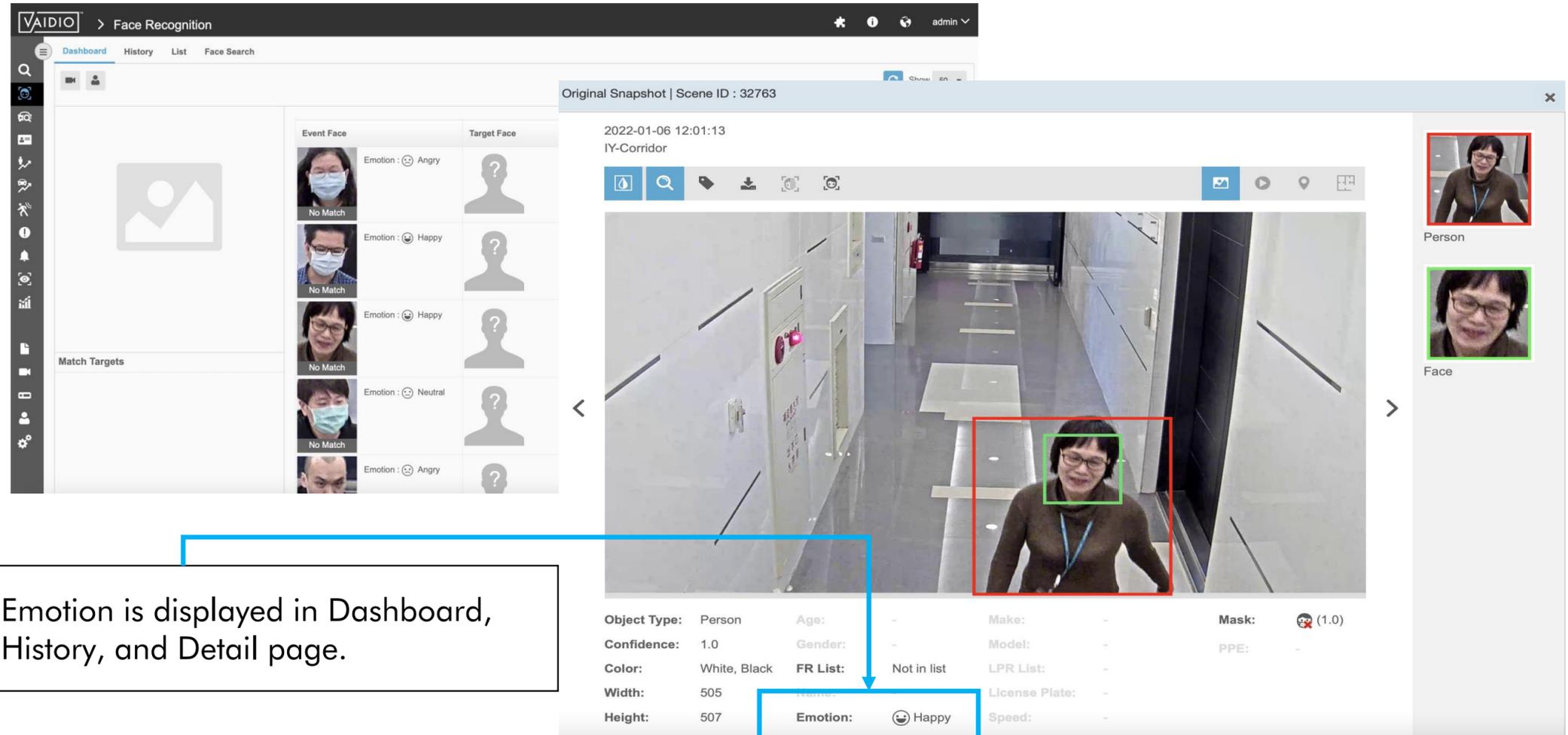
[Return to Face Recognition](#)

# 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 with masks to ensure quality control. If the system recognizes a person with a mask on, a corresponding emotion will no longer appear as it does in these screenshots. This will ensure improved accuracy in emotion detection.

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

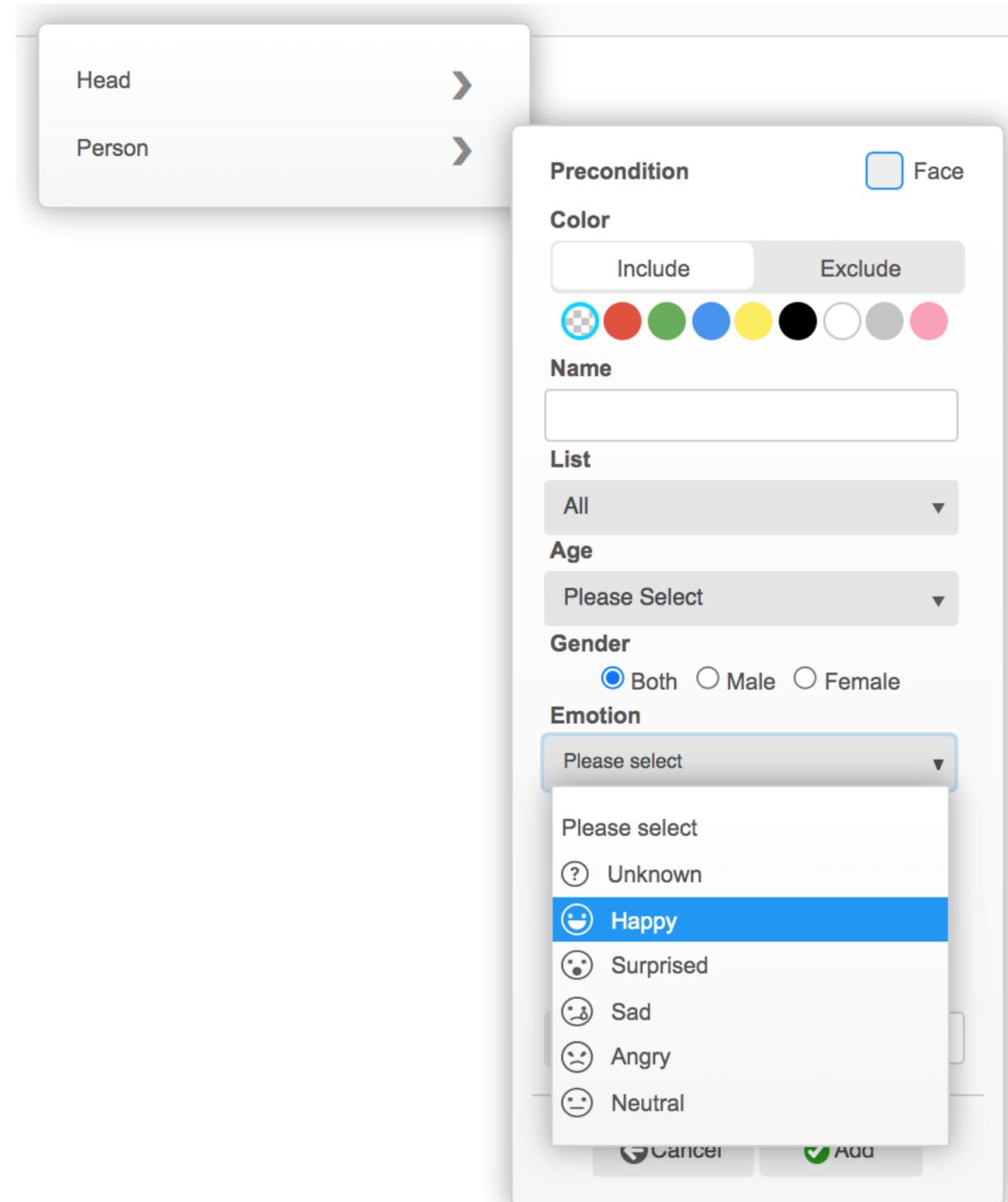


Emotion is displayed in Dashboard, History, and Detail page.

[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

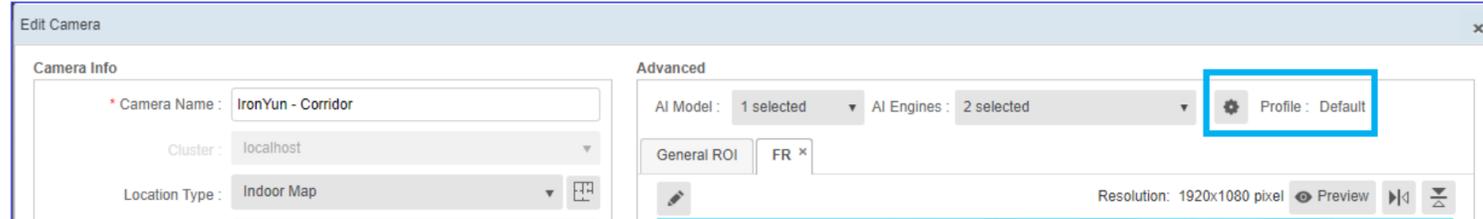
\* Private Key : Upload File  
\* Public Key Certificate : Upload File  
Certificate chain : Upload File  
Password :

[Return to Face Recognition](#)

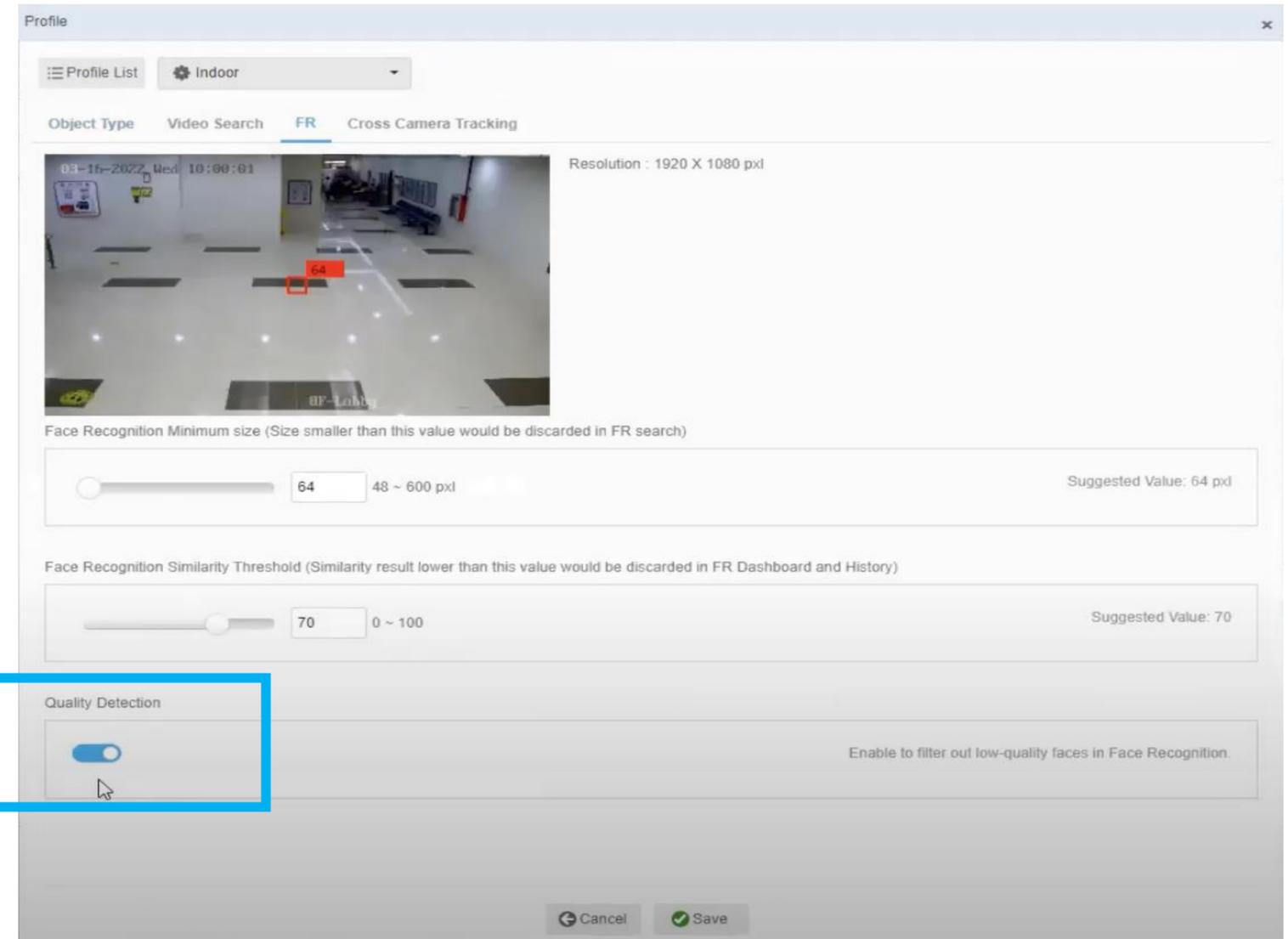
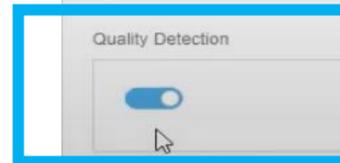
# EMOTION DETECTION (CONT.)

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](#)
- [Create License Plate List](#)
- [Dashboard – Real-time Detection](#)
- [History](#)

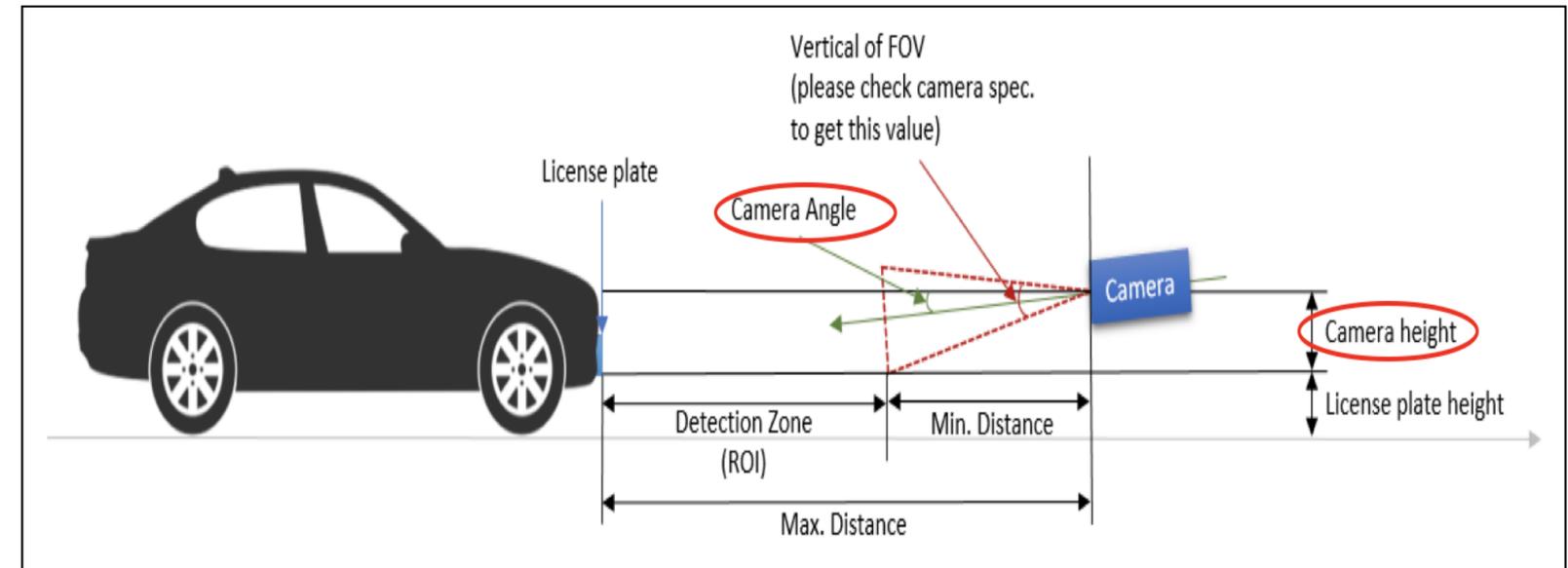
[Return to Table of Content](#)

# CAMERA PLACEMENT & SETTING

- ❑ To detect license plate for LPR, please make sure:
- ❑ License Plate Recognition AI Engine is enabled in Camera setting
- ❑ Object type license plate is enabled in Camera Profile setting
- ❑ 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

## Recommended camera placement for LPR:

Camera is placed at an angle as close to license plate level as possible



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



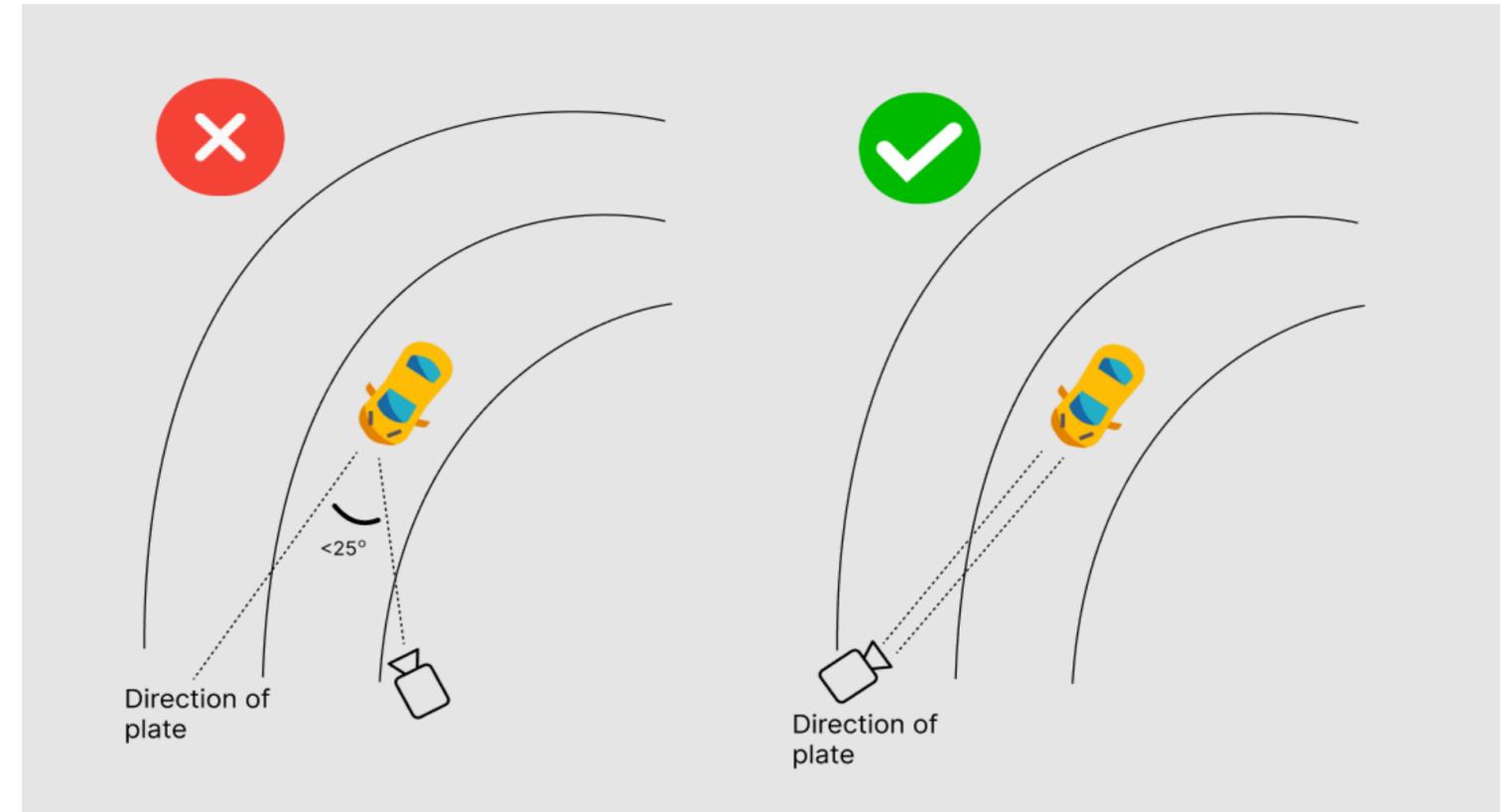
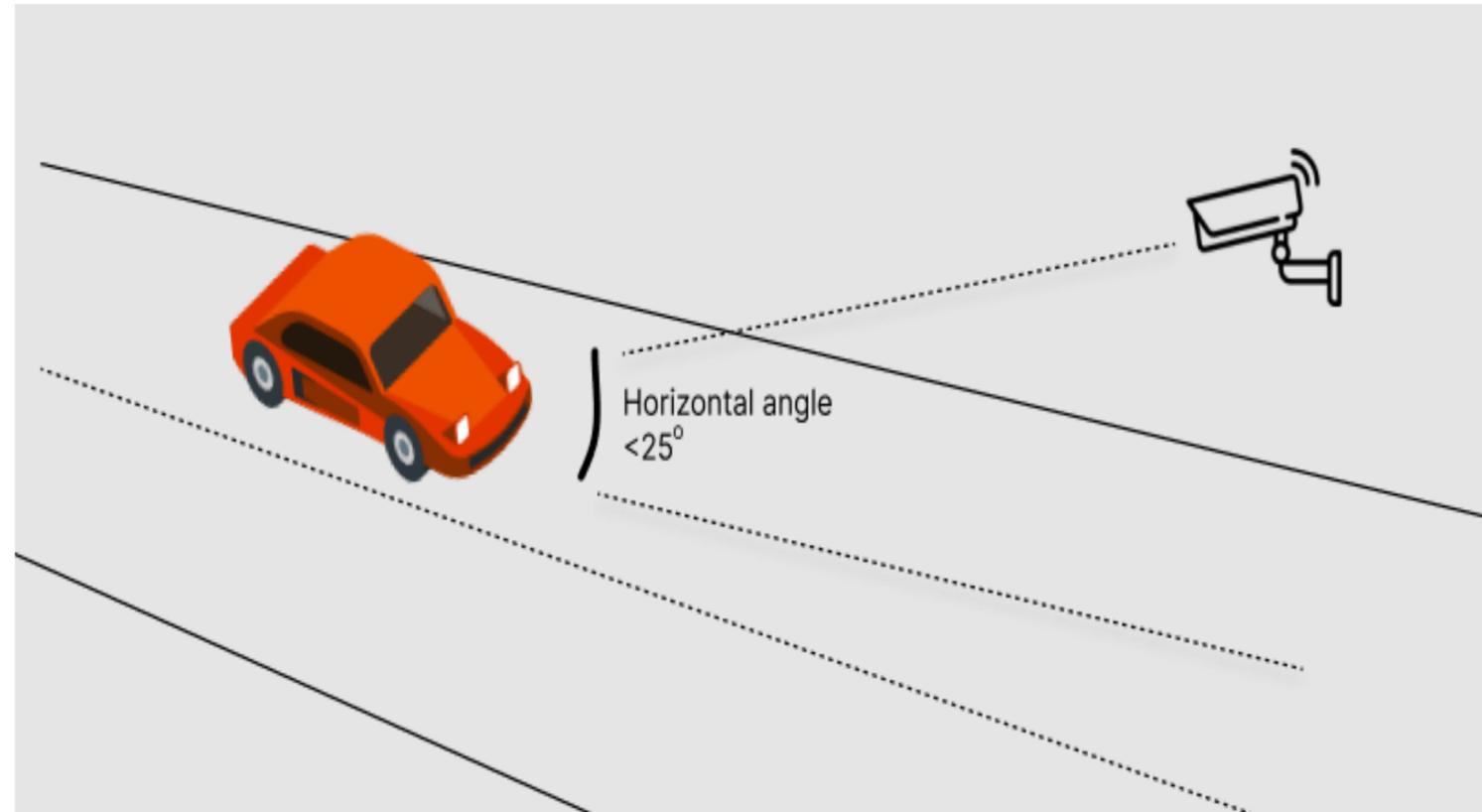
Example of camera specification

## Maximum car speed supported = ROI\_distance x FPS

1. FPS is an adjustable parameter in Vaidio. For Vaidio (AI NVR) 3.1.0, FPS = 2 frames/s as in parking lot mode, FPS = 4 as in city road mode, FPS = 6 as in highway mode. Other values can be requested after discussion with IronYun team
2. ROI\_distance = max distance – min distance (see Figure)
3. Calculator for detection zone & speed: contact IronYun team

[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 License Plate Recognition AI Engine

Click on Pencil icon in LPR tab to draw the regions of interest. (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
FPS = 2	FPS = 4	FPS = 6
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](#)

# CREATE CLIENT PLATE LIST

The screenshot shows the Vaidio License Plate Recognition interface. The 'List' tab is selected. A search bar is present with 'List: All' and 'License Plate:' fields. Below the search bar, there are buttons for 'List' and '+ Add License Plate'. A table displays the following data:

Created Time	License Plate	List	Description	Operation
2020-07-22 12:03:46	955-FL	Hsinchu Bus		[Edit] [Delete]
2020-07-22 12:03:36	959-FL	Hsinchu Bus		[Edit] [Delete]

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

The 'List' modal window shows a table with the following data:

Created Time	List Name
2020-07-27 14:59:57	
2020-07-22 12:02:39	

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

The 'New List' modal window contains a single input field labeled 'List Name' and 'Cancel' and 'OK' buttons at the bottom.

The 'Add License Plate' modal window contains the following fields:

- \* License Plate : [input field]
- \* List : [dropdown menu]
- Vehicle Owner : [input field]
- Registration Date : [Year dropdown] [Month dropdown] [Day dropdown]
- Address : [input field]
- Description : [text area]

'Cancel' and 'OK' buttons are located at the bottom.

[Return to License Plate Recognition](#)

# LICENSE PLATE RECOGNITION — DASHBOARD

Recommended setup: the camera should be no more than ~10 ft high, and the plate is tilted to at most ~30 degrees from face-on. Make sure that the plate size is at least 100 px wide to detect the characters with high accuracy.

Detected Image	License Plate Image	License Plate	Timestamp	Location
		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

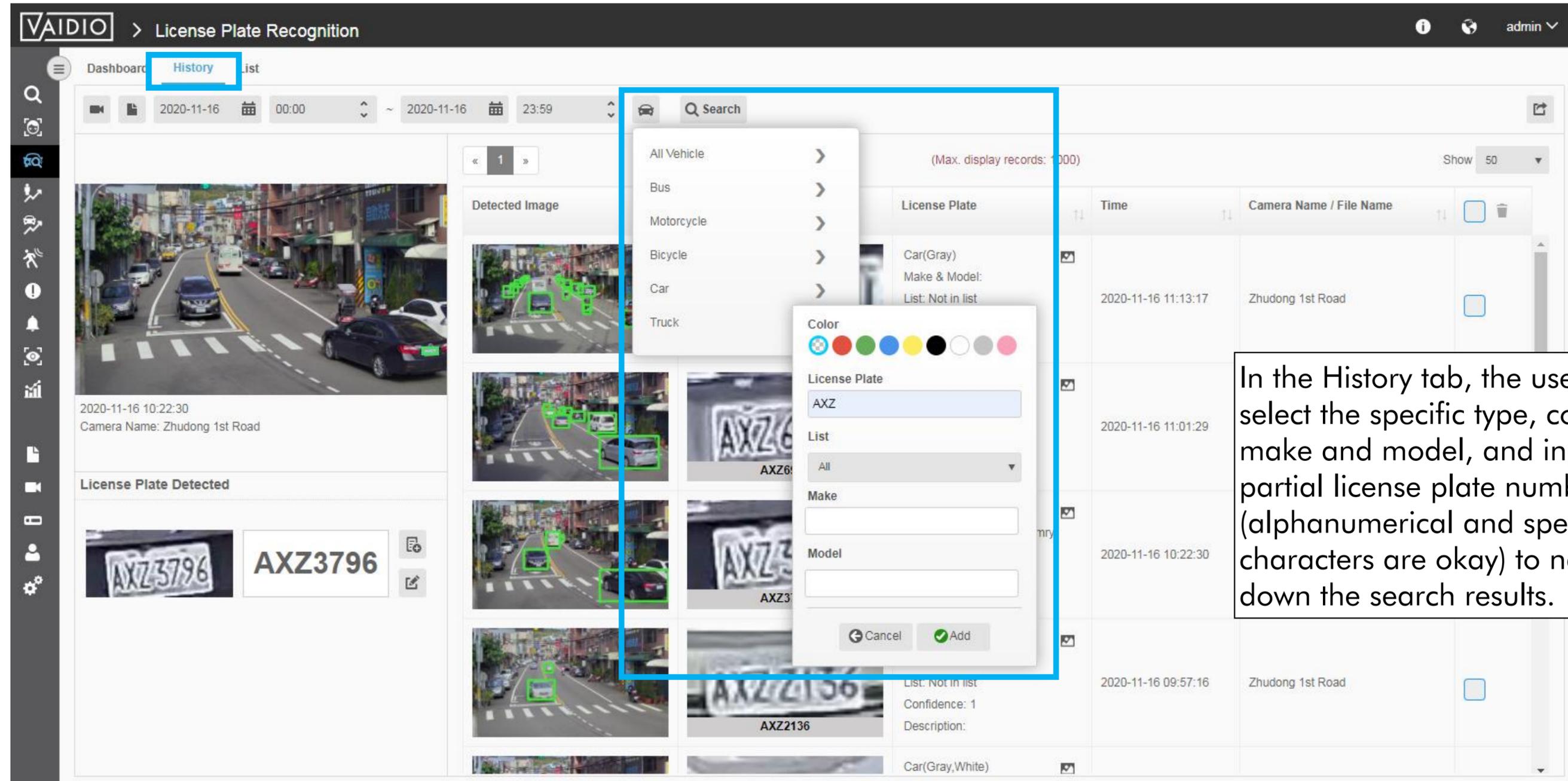
**License Plate Detected**

APT1

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

[Return to License Plate Recognition](#)

# LICENSE PLATE RECOGNITION — HISTORY



The screenshot displays the 'History' tab of the VAIDIO License Plate Recognition system. The interface includes a search bar at the top, a list of detected license plates, and a detailed view of a specific license plate (AXZ3796). A search filter menu is open, showing options for vehicle type (All Vehicle, Bus, Motorcycle, Bicycle, Car, Truck), color, license plate number (AXZ), list, make, and model. A text box explains that users can use these filters to narrow down search results.

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

[Return to License Plate Recognition](#)

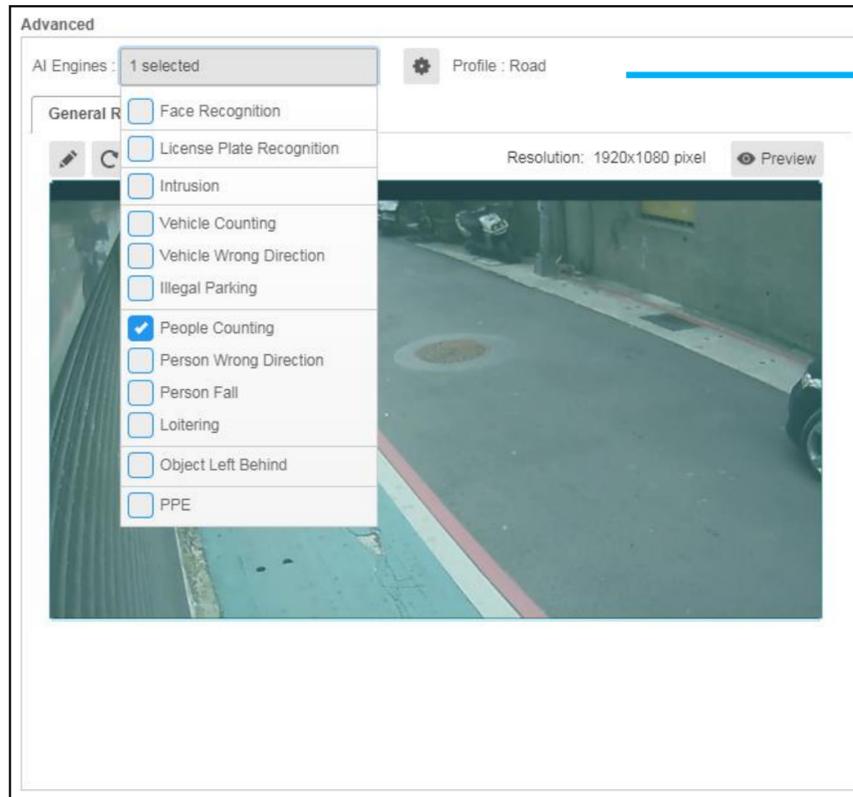
# PEOPLE/VEHICLE COUNTING

---

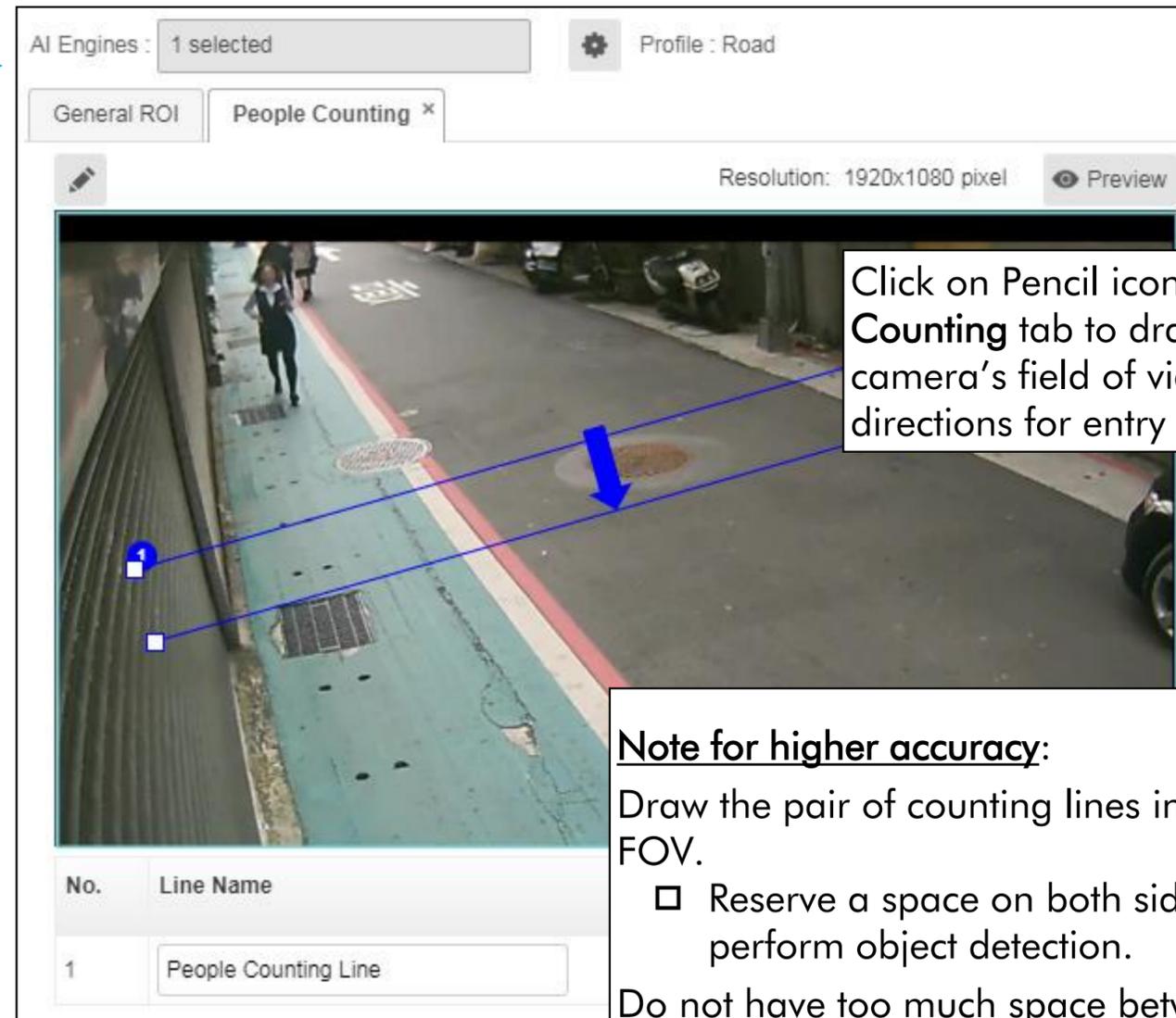
- [Counting Line Configuration](#)
- [People Counting](#)
  - [Configuration](#)
  - [Dashboard - Real-time Detection](#)
  - [History](#)
- [Vehicle Counting](#)
- [Counting Alerts](#)

[\*\*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 directions for entry and exit.

**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.

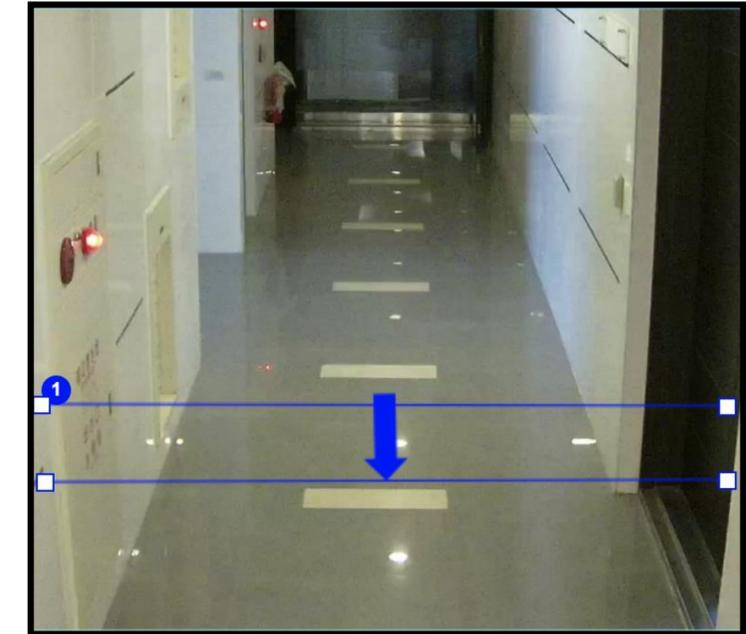
[Return to People/Vehicle Counting](#)

# PEOPLE COUNTING — CONFIGURATION

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

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

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



[Return to People/Vehicle Counting](#)

# PEOPLE COUNTING — DASHBOARD

The dashboard interface includes a sidebar with navigation icons, a top navigation bar with 'VAIDIO > People Counting', and a main content area. The main content area is divided into several sections:

- Navigation:** 'Dashboard' and 'History' tabs are visible.
- Camera Selection:** A dropdown menu shows 'Tainan Street' selected.
- Live View:** A video feed from the 'Tainan Street' camera. A blue box in the bottom right corner of the video displays 'In: 181 / Out: 176'. A blue arrow points to a counting line on the street.
- Summary Table:** A table showing 'In : 181' and 'Out : 176'. Below it, a table lists camera names and line names:
 

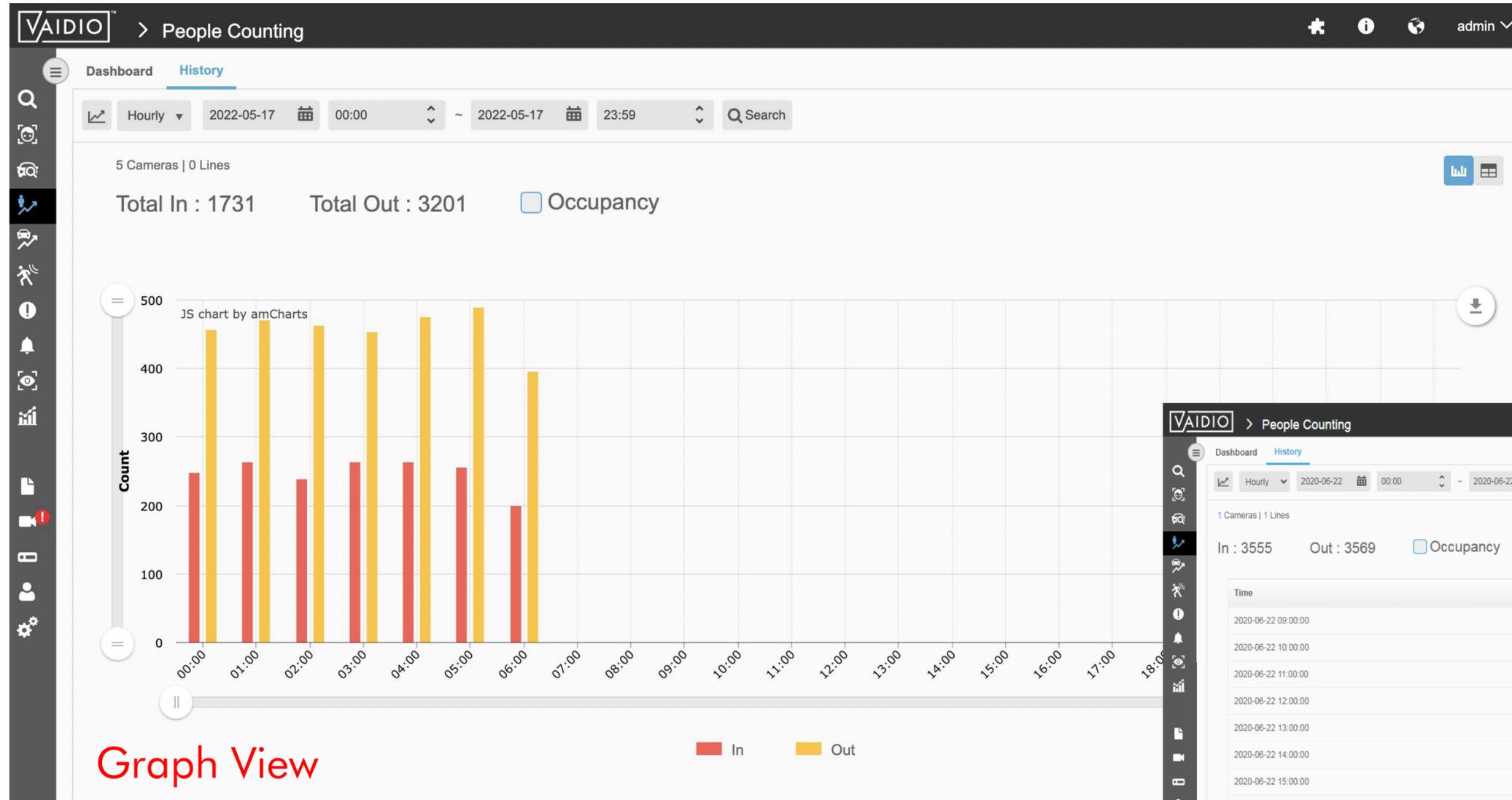
Camera Name	Line Name
Tainan Street	1. People
- Configuration Window:** A modal window titled 'Shopping Mall Live(Search2)' is open, showing a table for selecting counting lines:
 

No.	Line Name
<input type="checkbox"/>	1
<input type="checkbox"/>	People Counting Line

 Below this, a section for 'Tainan Street' shows the same line selected with a checked checkbox.
- Bar Chart:** A bar chart titled 'Occupancy' showing 'Count' on the y-axis (0 to 20) and time on the x-axis (15:26 to 15:56). Red bars represent 'In' counts and yellow bars represent 'Out' counts. A callout box at 15:51 shows 'In: 10' and 'Out: 6'.

[Return to People/Vehicle Counting](#)

# PEOPLE COUNTING — HISTORY



	A	B	C	E
1	<b>History of People Counting</b>			
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	<b>Time</b>	<b>In</b>	<b>Out</b>	
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				

Enable to export to excel file

1 Camera | 1 Lines

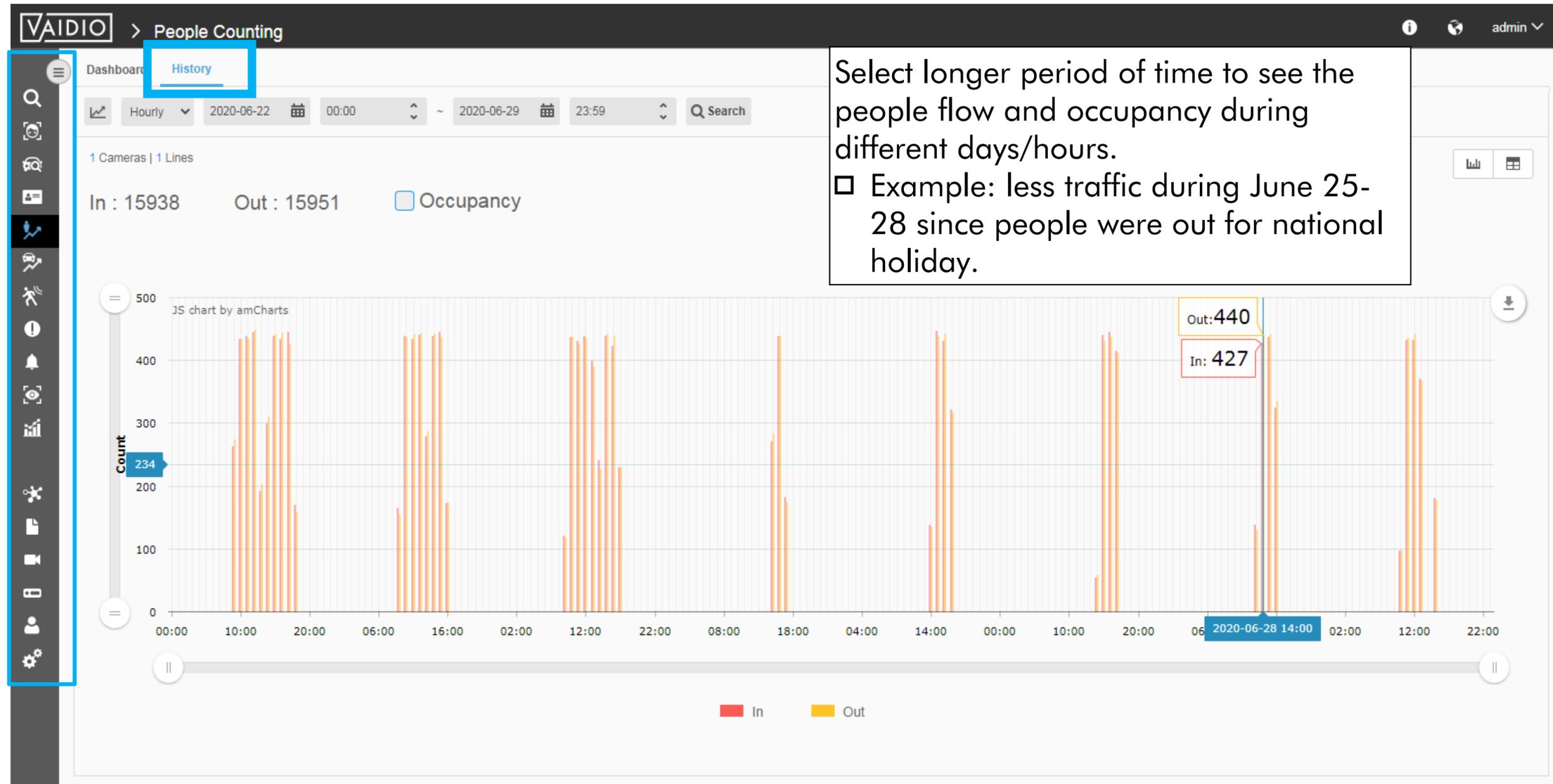
In : 3555    Out : 3569     Occupancy

Time	In	Out
2020-06-22 09:00:00	262	274
2020-06-22 10:00:00	434	434
2020-06-22 11:00:00	438	433
2020-06-22 12:00:00	444	448
2020-06-22 13:00:00	192	202
2020-06-22 14:00:00	299	310
2020-06-22 15:00:00	439	441
2020-06-22 16:00:00	433	443
2020-06-22 17:00:00	444	425
2020-06-22 18:00:00	170	159

**List View**

[Return to People/Vehicle Counting](#)

# PEOPLE COUNTING — HISTORY (CONT.)



Select 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](#)

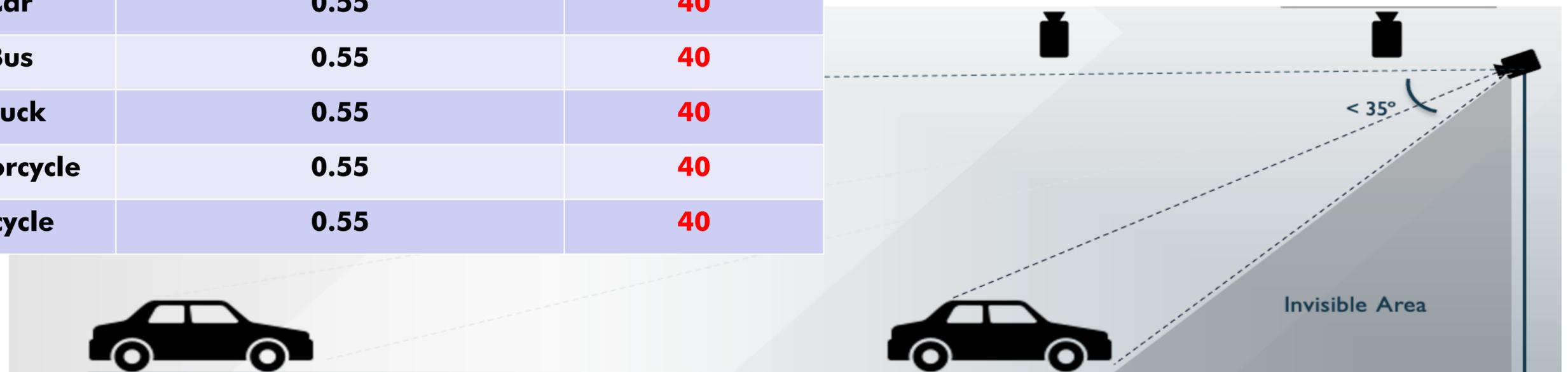
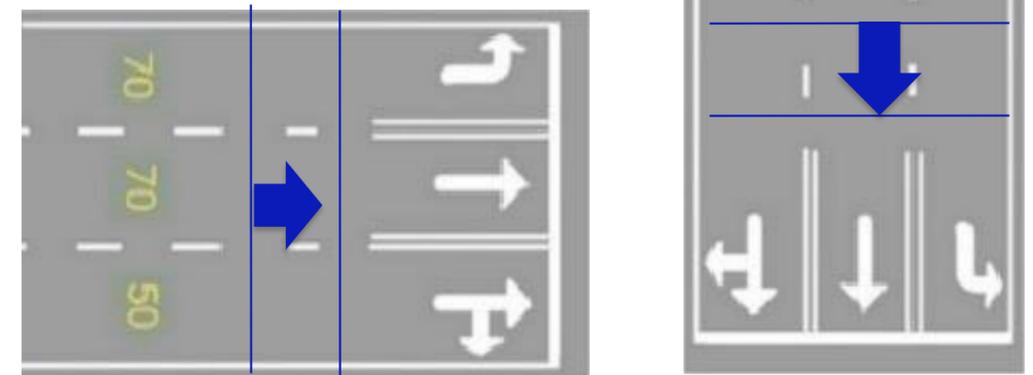
# VEHICLE COUNTING — CONFIGURATION

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

1. The angle of the camera should be  $< 35$  degrees in the recognition zone.
2. 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

**Dashboard** | History

Zhudong 1st Road

Select Camera to see the live view

In : 189    Out : 185

Camera Name    Line Name

Zhudong\_1st Road    1. Veh

Line List

Search for : Camera Name    Please enter search string

Zhudong 1st Road

No.	Line Name
1	Vehicle Counting Line

In: 189 / Out: 185

Occupancy

In    Out

Count

JS chart by amCharts

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

Bicycle: 0  
 Bus: 0  
 Car: 3  
 Motorcycle: 0  
 Truck: 1

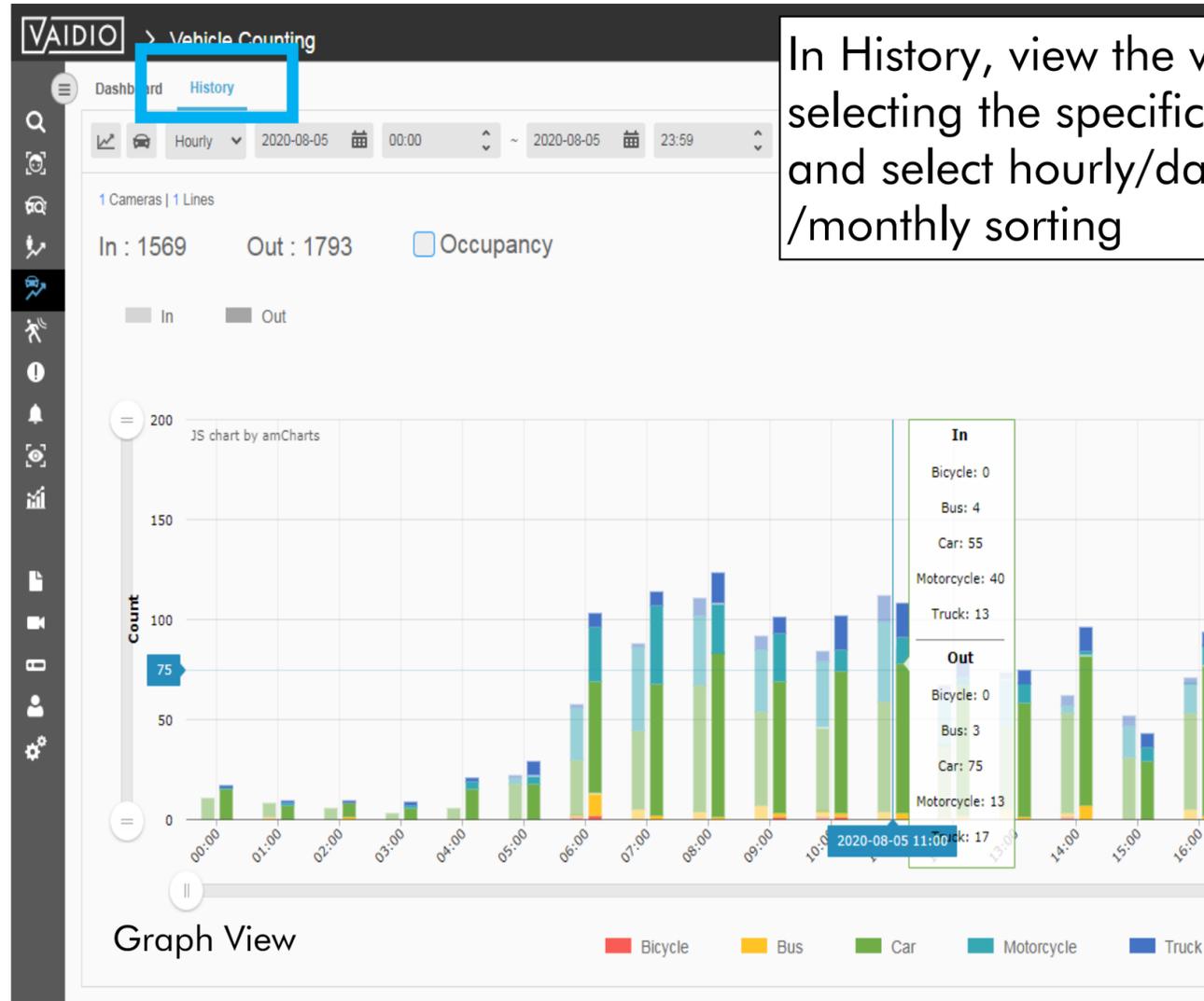
See live counting with inbound and outbound numbers per minute, and the numbers of different types of vehicle.

[Return to People/Vehicle Counting](#)

# VEHICLE COUNTING — HISTORY

	A	B	C	D	E
1	<b>History of Vehicle Counting</b>				
2					
3	Search Time: 2020-08-05 00:00:00 - 2020-08-05 23:59:00				
4	Download Time: 2020-08-06 15:44:59				
5	Time	In		Out	
6		Bicycle	0	Bicycle	0
7		Bus	0	Bus	0
8	2020-08-05 00:00:00	Car	11	Car	15
9		Motorcycle	0	Motorcycle	1
10		Truck	0	Truck	1
11		<b>Total vehicle</b>	<b>11</b>	<b>Total vehicle</b>	<b>17</b>
12		Bicycle	0	Bicycle	0
13		Bus	1	Bus	0
14	2020-08-05 01:00:00	Car	7	Car	7
15		Motorcycle	0	Motorcycle	1
16		Truck	0	Truck	1
17		<b>Total vehicle</b>	<b>8</b>	<b>Total vehicle</b>	<b>9</b>

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



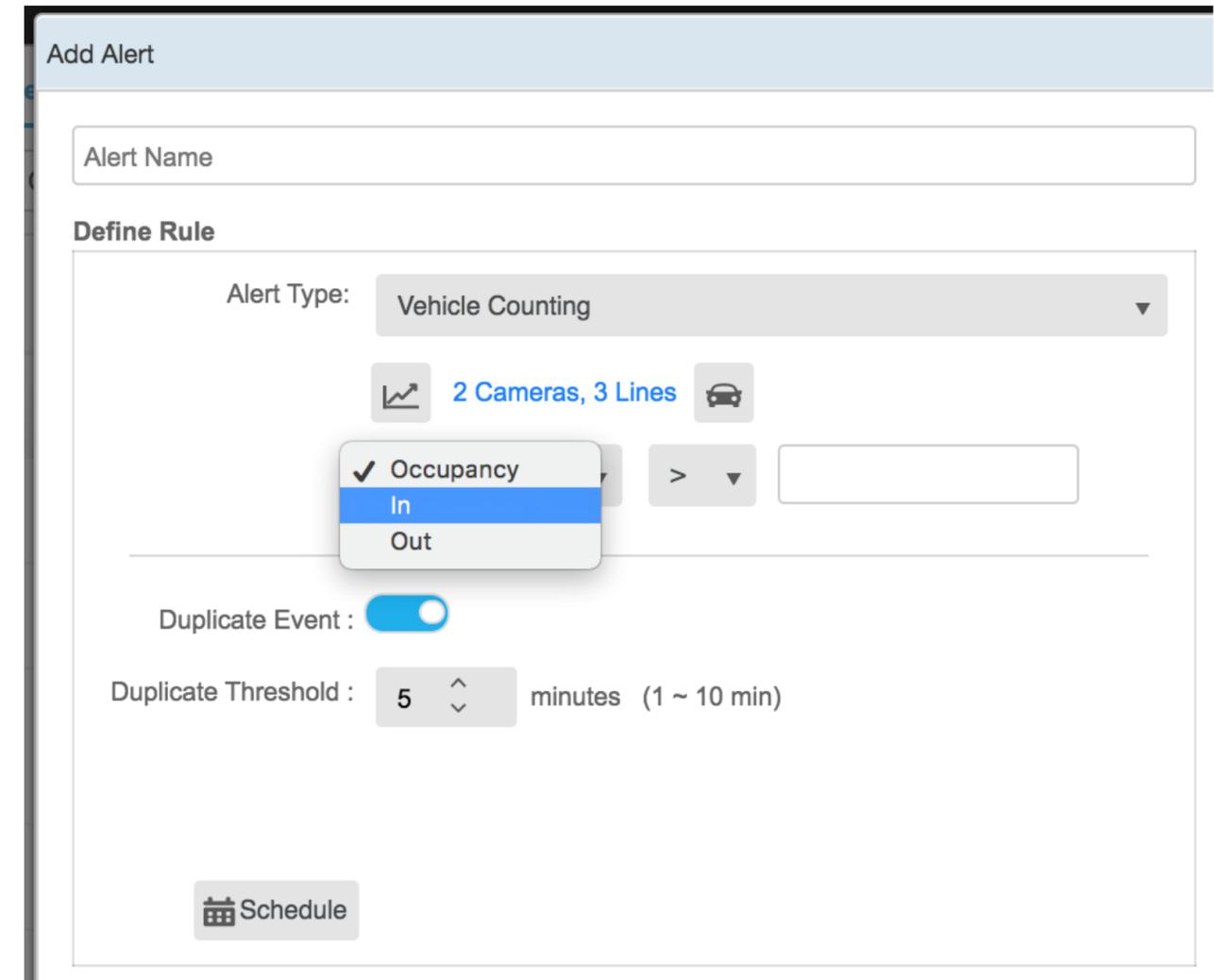
**Click to export the report to excel file**

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	9
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	67	80

[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**

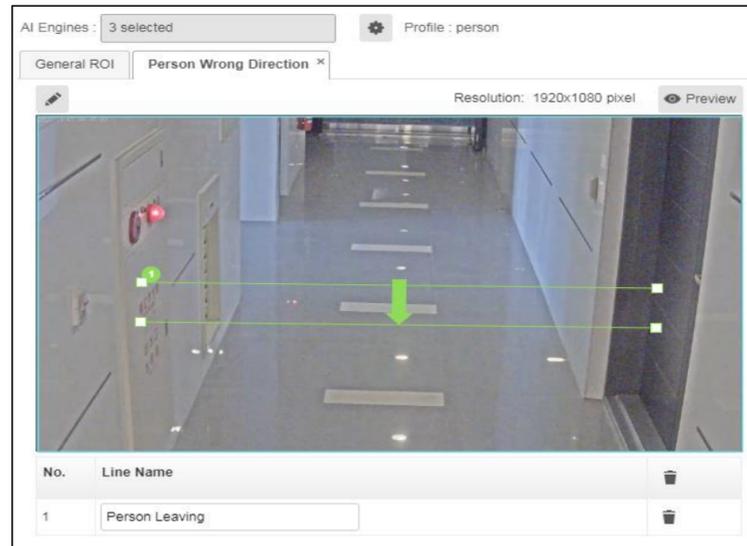
---

- ❑ [Person Wrong Direction](#)
- ❑ [Person Fall](#)
- ❑ [Person Loitering](#)
- ❑ [Object Left behind](#)
- ❑ [Vehicle Wrong Direction](#)
- ❑ [Illegal Parking](#)
- ❑ [Speeding Detection](#)
- ❑ [Alert](#)

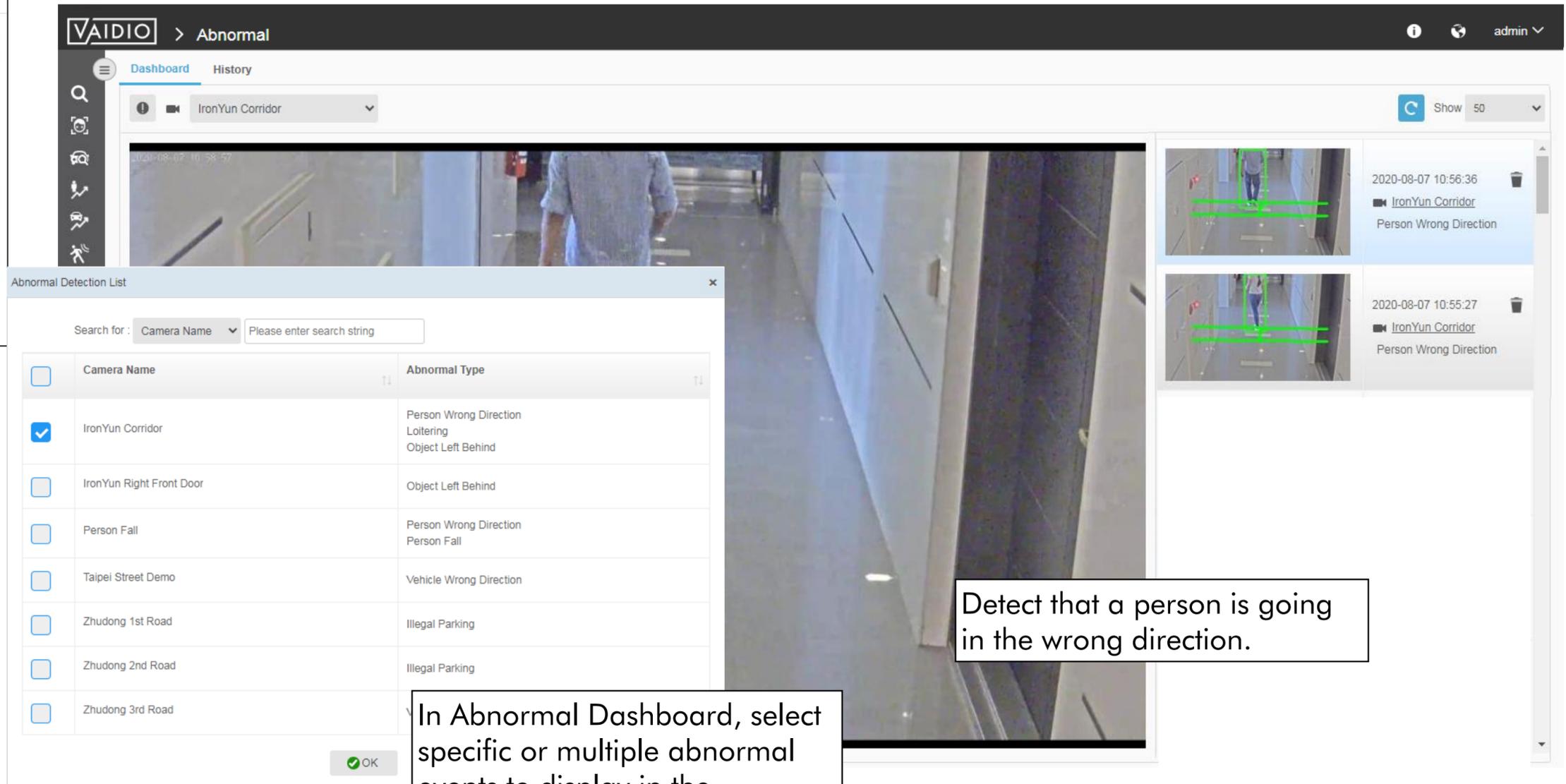
[Return to Table of Content](#)

# PERSON WRONG DIRECTION

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.



In **Camera Setting**, select/activate Person Wrong Direction AI Engine, then draw the Line and define the direction.

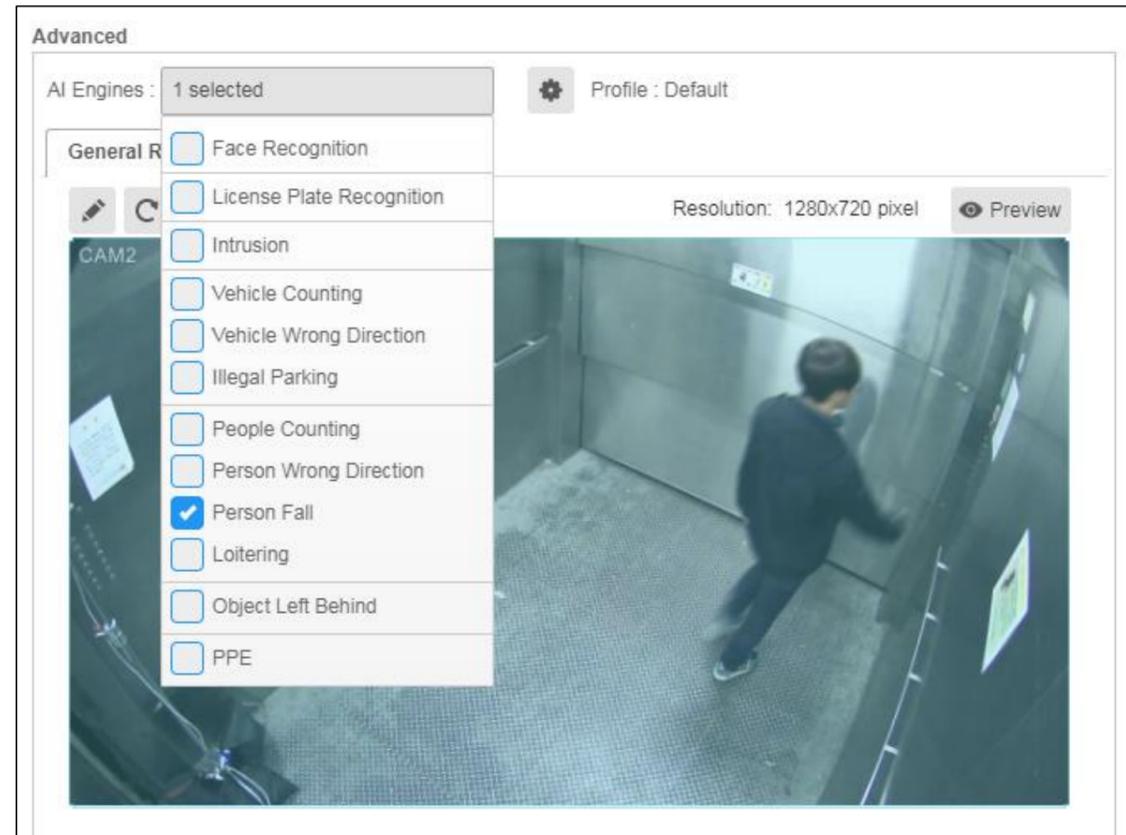


Detect that a person is going in the wrong direction.

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

[Return to Abnormal](#)

# PERSON FALL

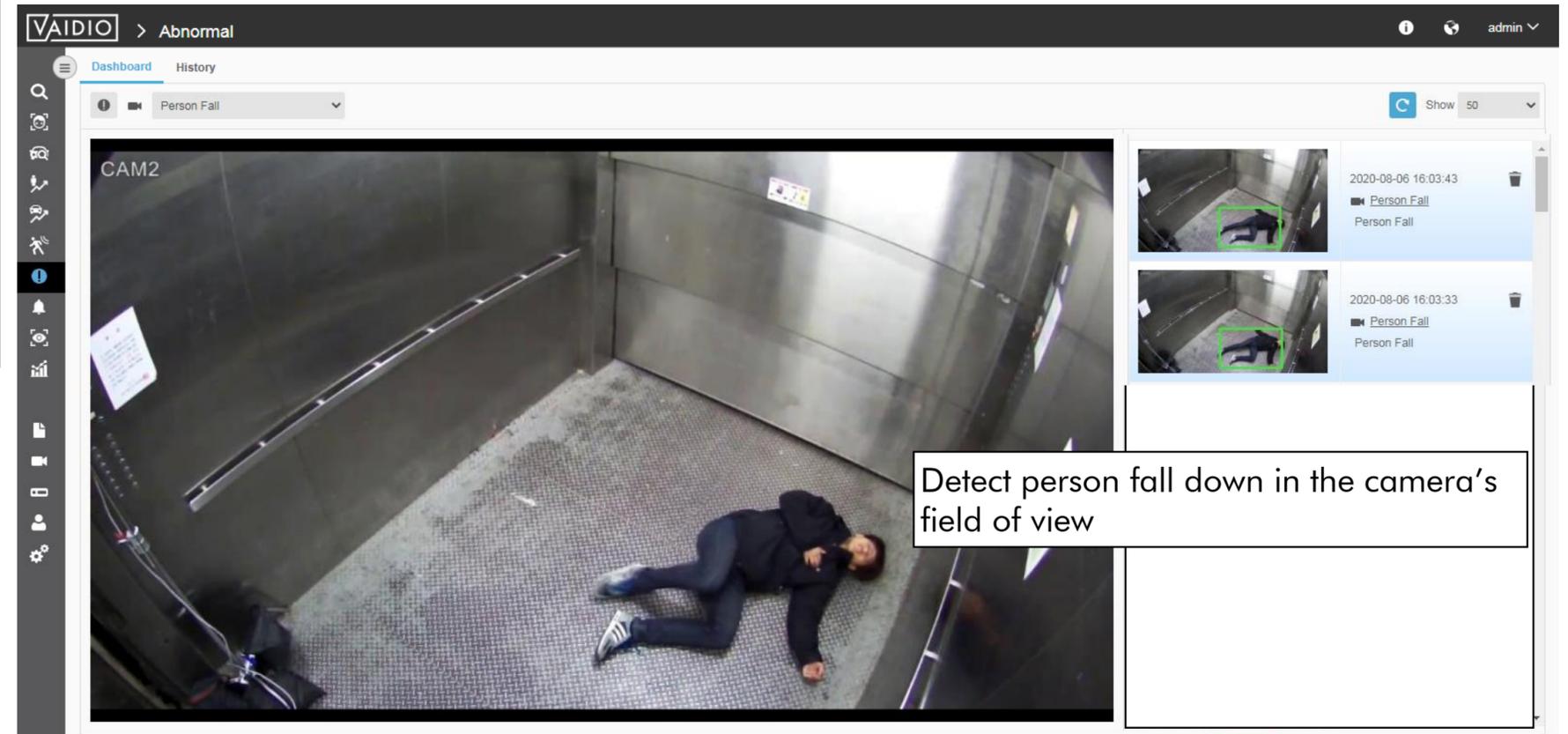


In **Camera Setting**, select/activate Person Fall AI Engine

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

Real-time Alert:

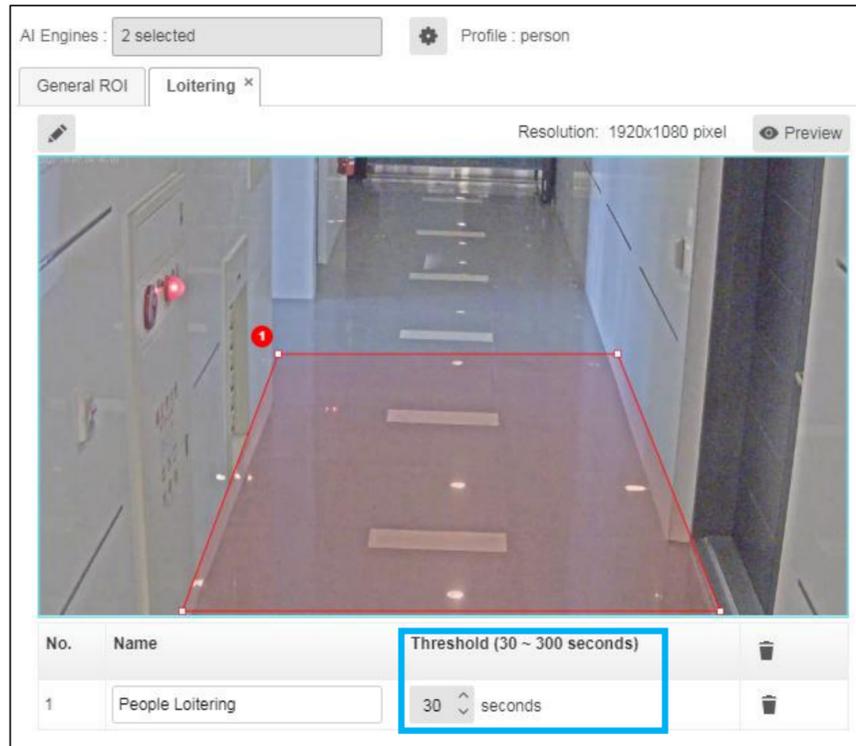
- ❑ When defining the alert rule, select Person Fall alert type to get real-time notifications when the event happens.
- ❑ Alert for person falling is only triggered after the person fell and remained on the ground for more than 10 seconds. Hence, the delay is 10s. Reasoning: if one can stand up and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



[Return to Abnormal](#)

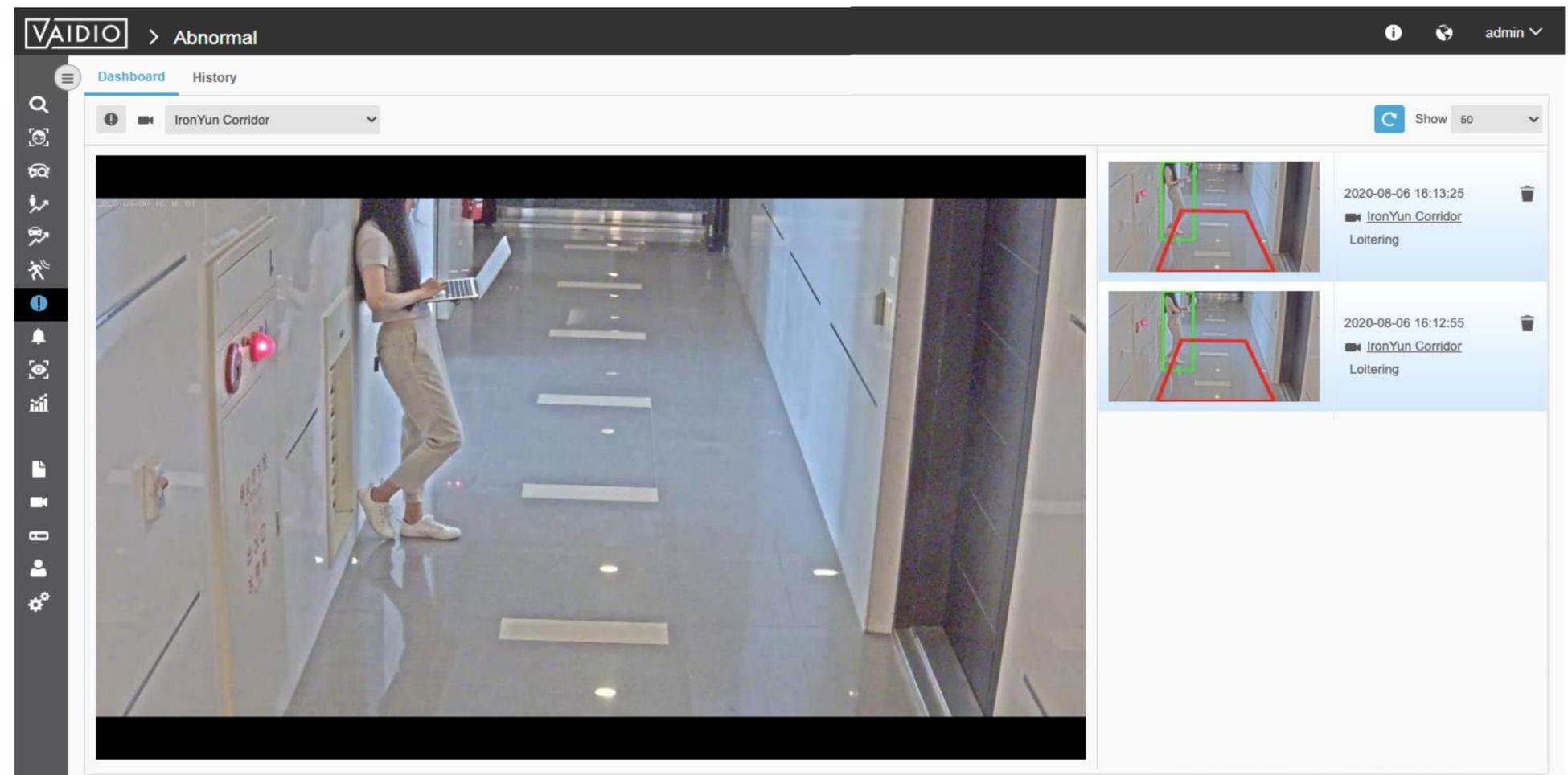
# PERSON LOITERING

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



In **Camera Setting**, select/activate Loitering AI Engine, then draw the ROI (region of interest) to detect a person loitering in the specific area. The user can define the threshold of the period that the person stays as loitering.

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

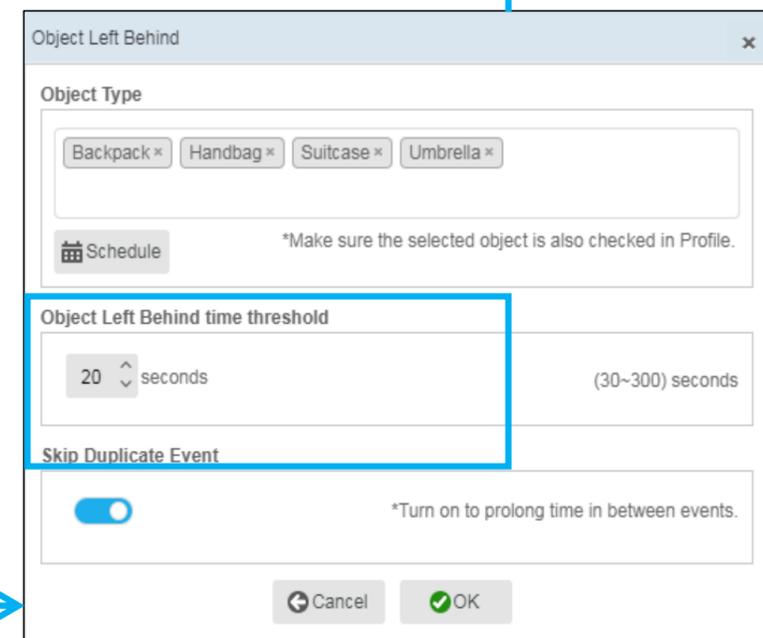
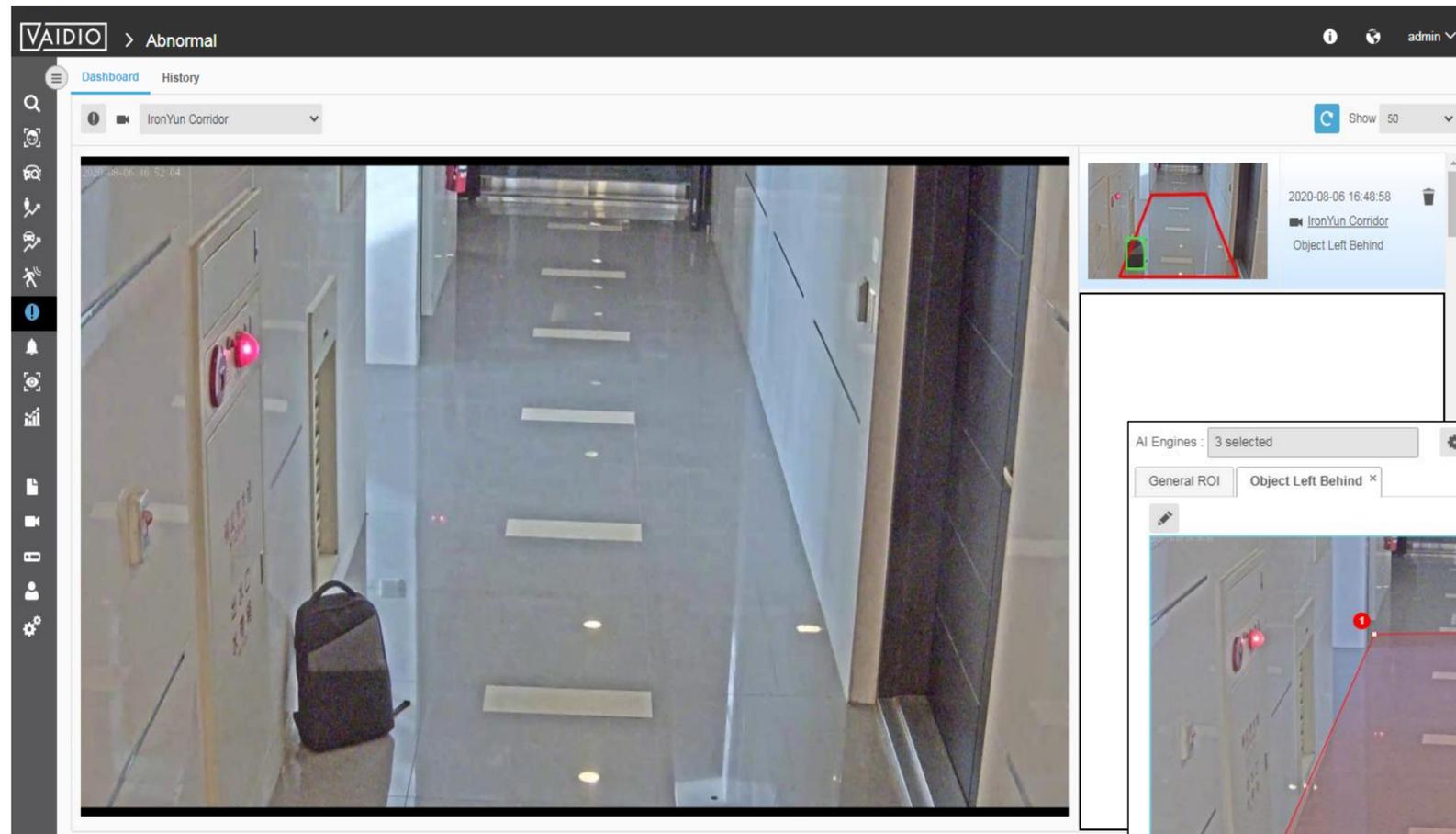


[Return to Abnormal](#)

# OBJECT LEFT BEHIND

In **Camera Setting**, select/activate Object Left Behind AI Engine

- ❑ 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

AI Engines : 1 selected

General ROI Vehicle Wrong Direction

Resolution: 1920x1080 pixel

Profile

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	--

Real-time Alert:

- 2020-08-07 11:27:46 Taipei Street Demo Vehicle Wrong Direction
- 2020-08-07 11:27:29 Taipei Street Demo Vehicle Wrong Direction
- 2020-08-07 11:27:21 Taipei Street Demo Vehicle Wrong Direction

Detect vehicles that travel in the wrong direction.

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

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.

[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.

The screenshot displays the Vaidio software interface for configuring an illegal parking alert. The main window shows a live camera feed of a street with a yellow-painted ROI. A sidebar on the right lists detected events with timestamps and vehicle types. A settings panel on the right allows defining the ROI name, vehicle type, and threshold.

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

In **Camera Setting**, select/activate Illegal Parking AI Engine, then draw the ROI (region of interest) in the non-parking area. The user can define the specific vehicle type and the threshold of the period that the vehicle stays to define as illegal parking.

- ❑ Max threshold is 300 s for best performance. To have a longer time threshold, contact IronYun 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

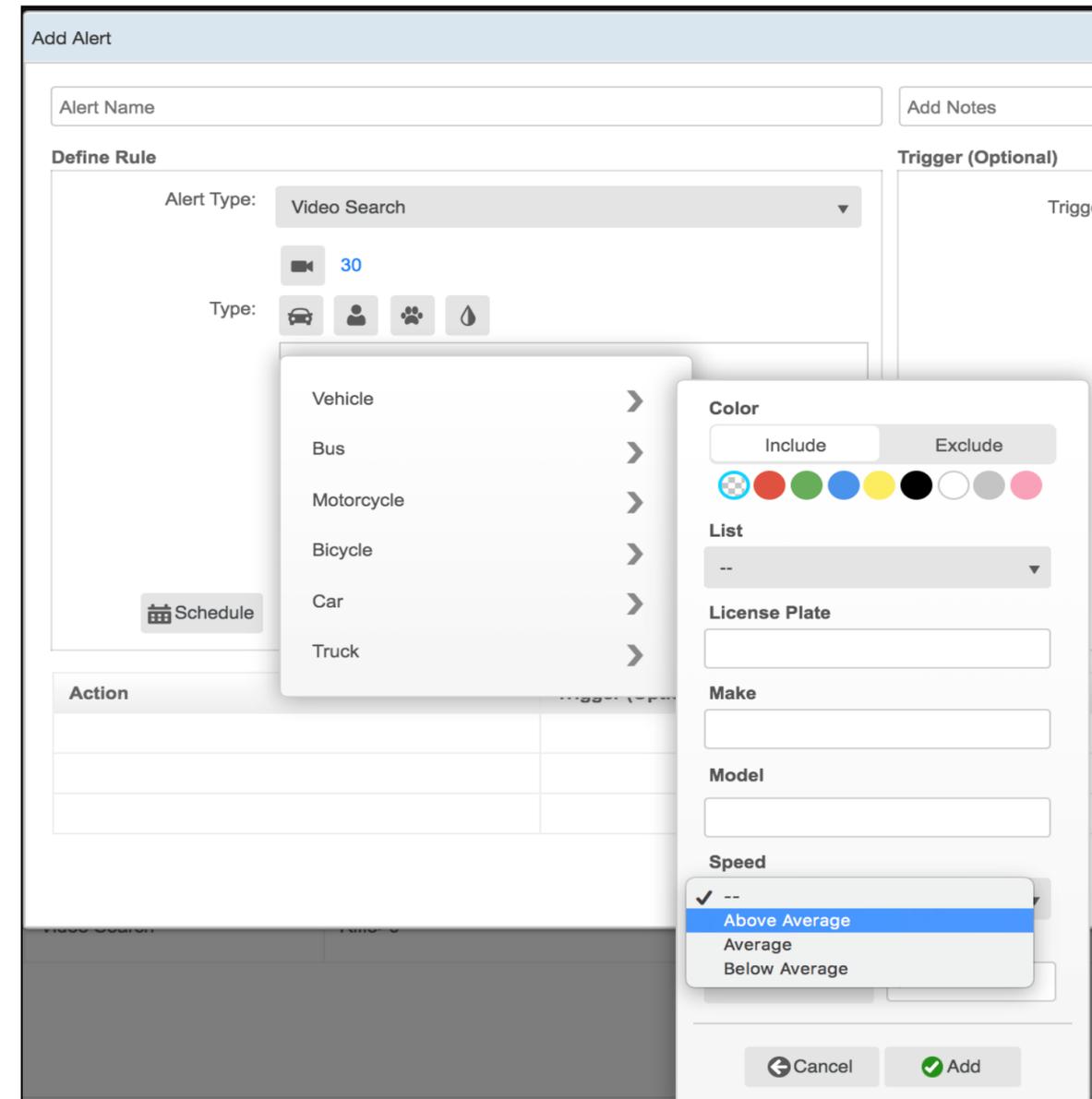
Click on the speedometer icon to draw a line across the traffic flow. Limit: one line per camera FOV.

No.	Draw Type	Line Name	
1	Speed Detection		

[Return to Abnormal](#)

# ABNORMAL – SPEED ALERT

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



[Return to Abnormal](#)

# AGE & GENDER DETECTION

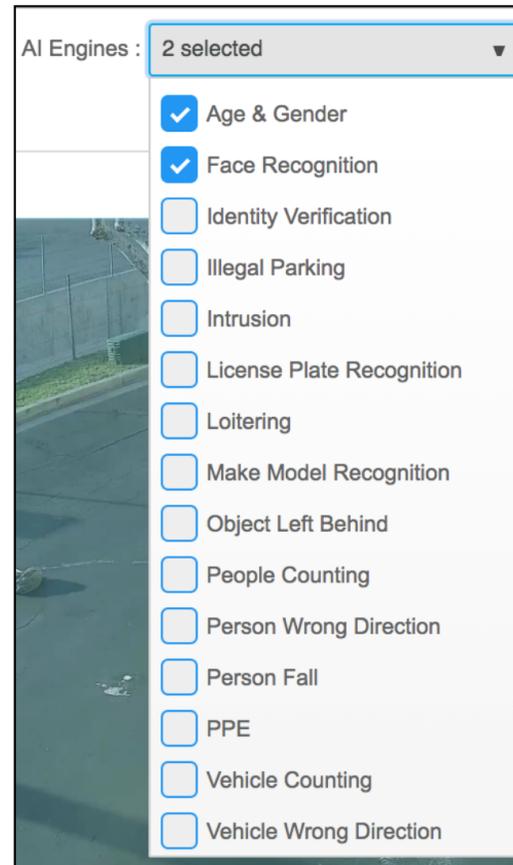
---

- [Activate Age & Gender Detection](#)

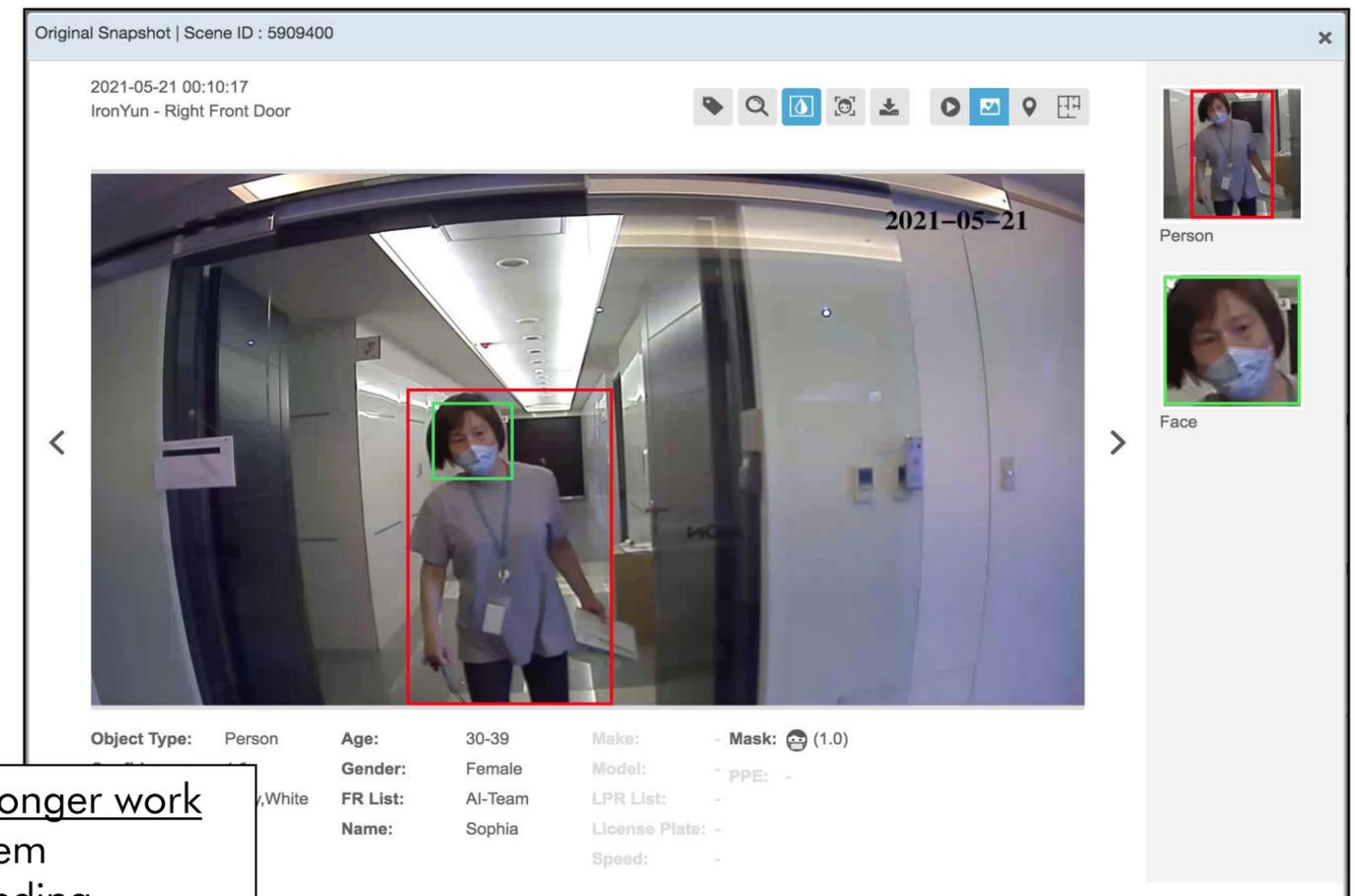
[Return to Table of Content](#)

# 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 with a mask on, 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](#)

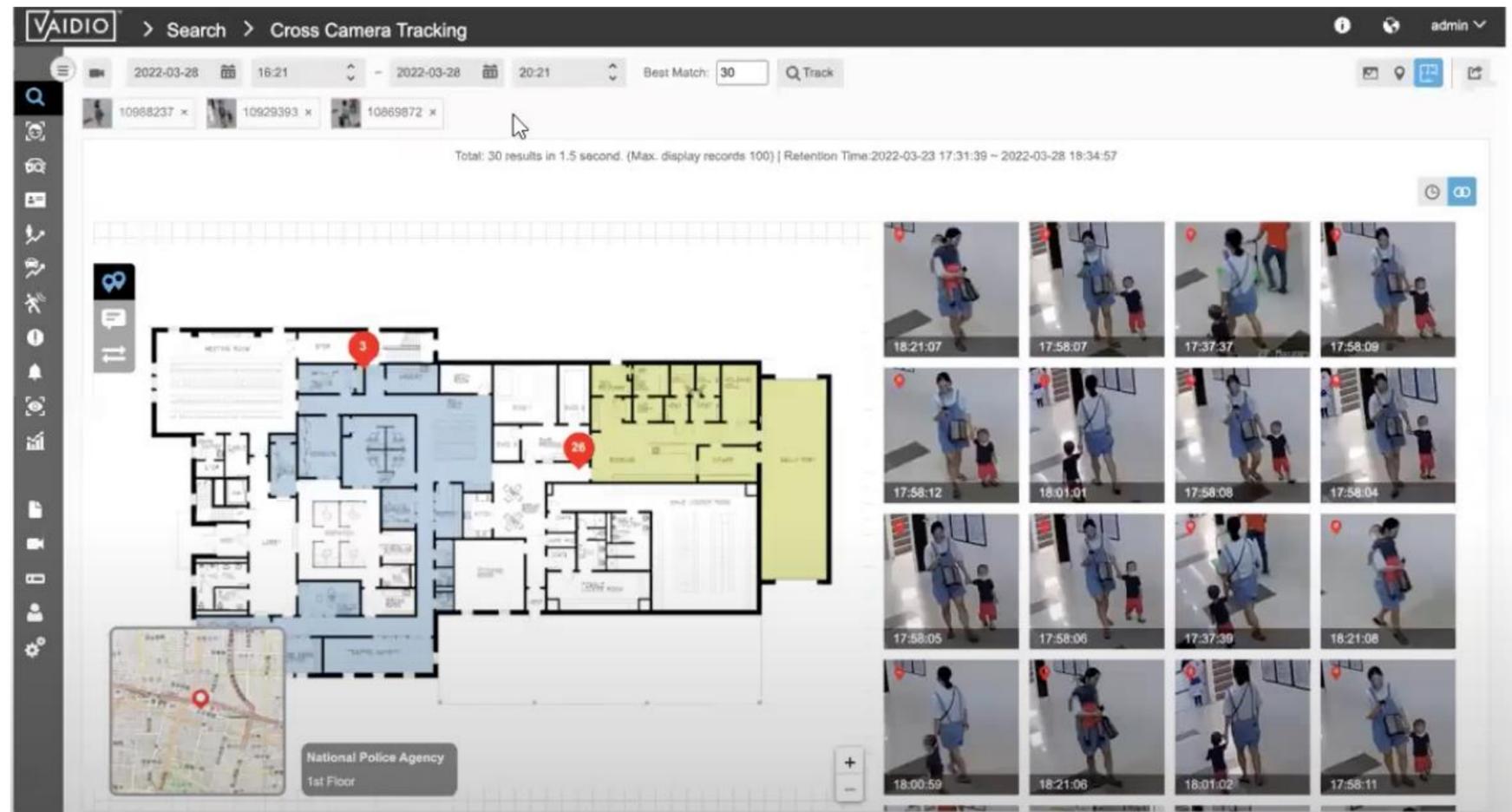
# CROSS CAMERA TRACKING

---

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

[Return to Table of Content](#)

# DASHBOARD



What to expect:

- ❑ Select and track a person through multiple cameras based on the **color** of their clothes 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

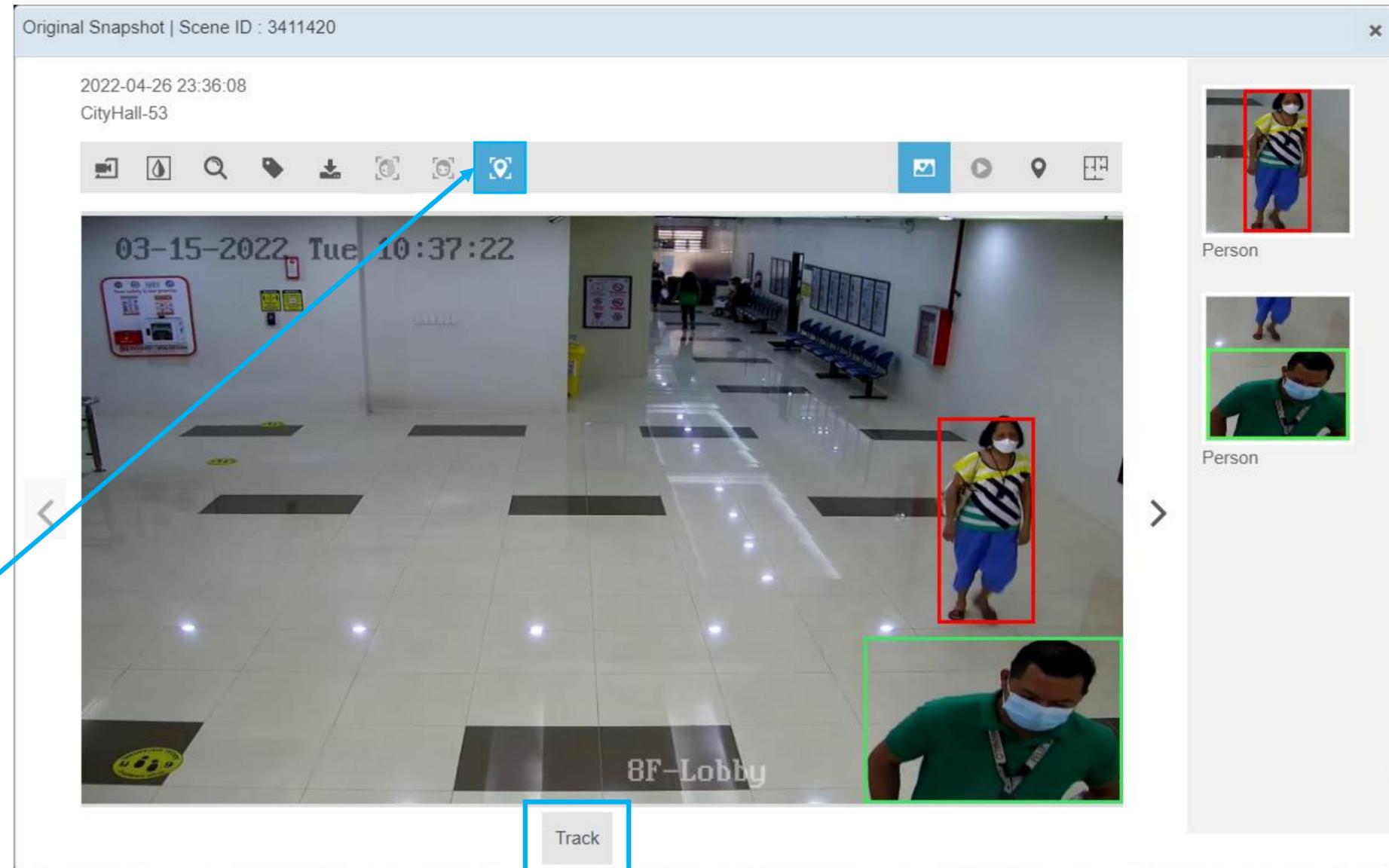
Begin the **Cross Camera Tracking (CCT)** process by conducting a person search, e.g., person wearing blue and yellow.

Note: CCT is for **person tracking** and based on **colors** 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.)

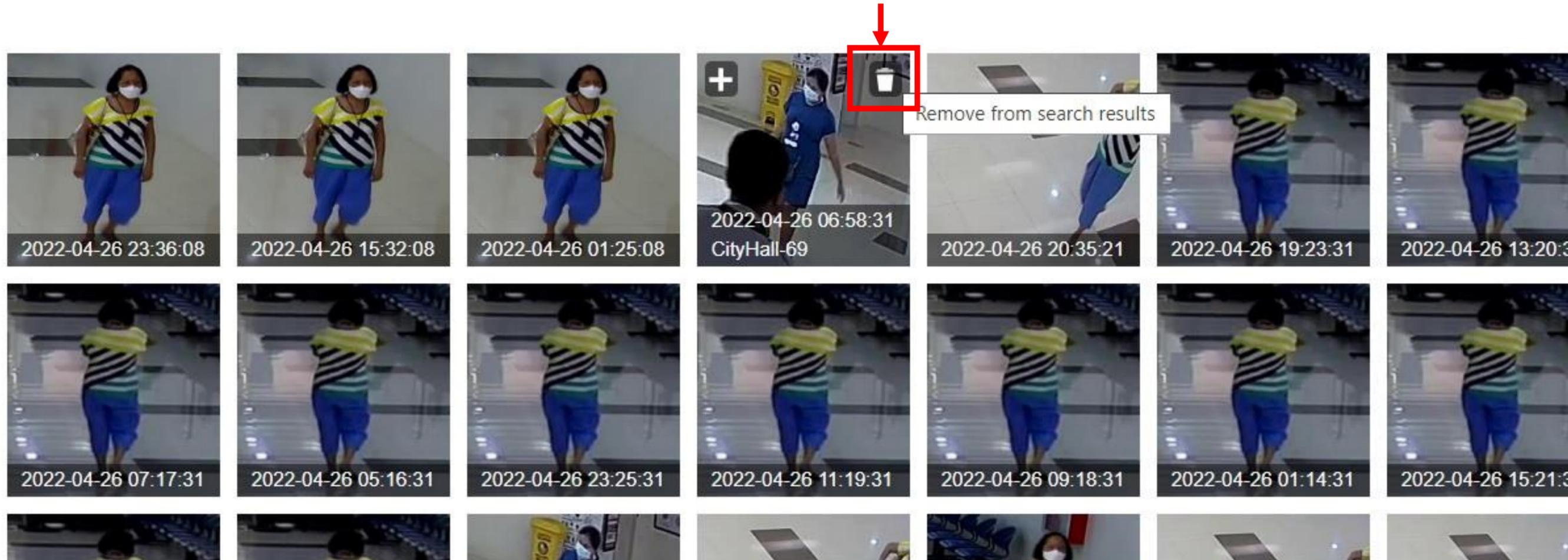
When conducting Cross Camera Tracking, make sure to reset the search timeframe parameters at the top to ensure that the dates/time range of the search matches your initial search.

**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.

[Return to Cross Camera Tracking](#)

# REFINE RESULTS

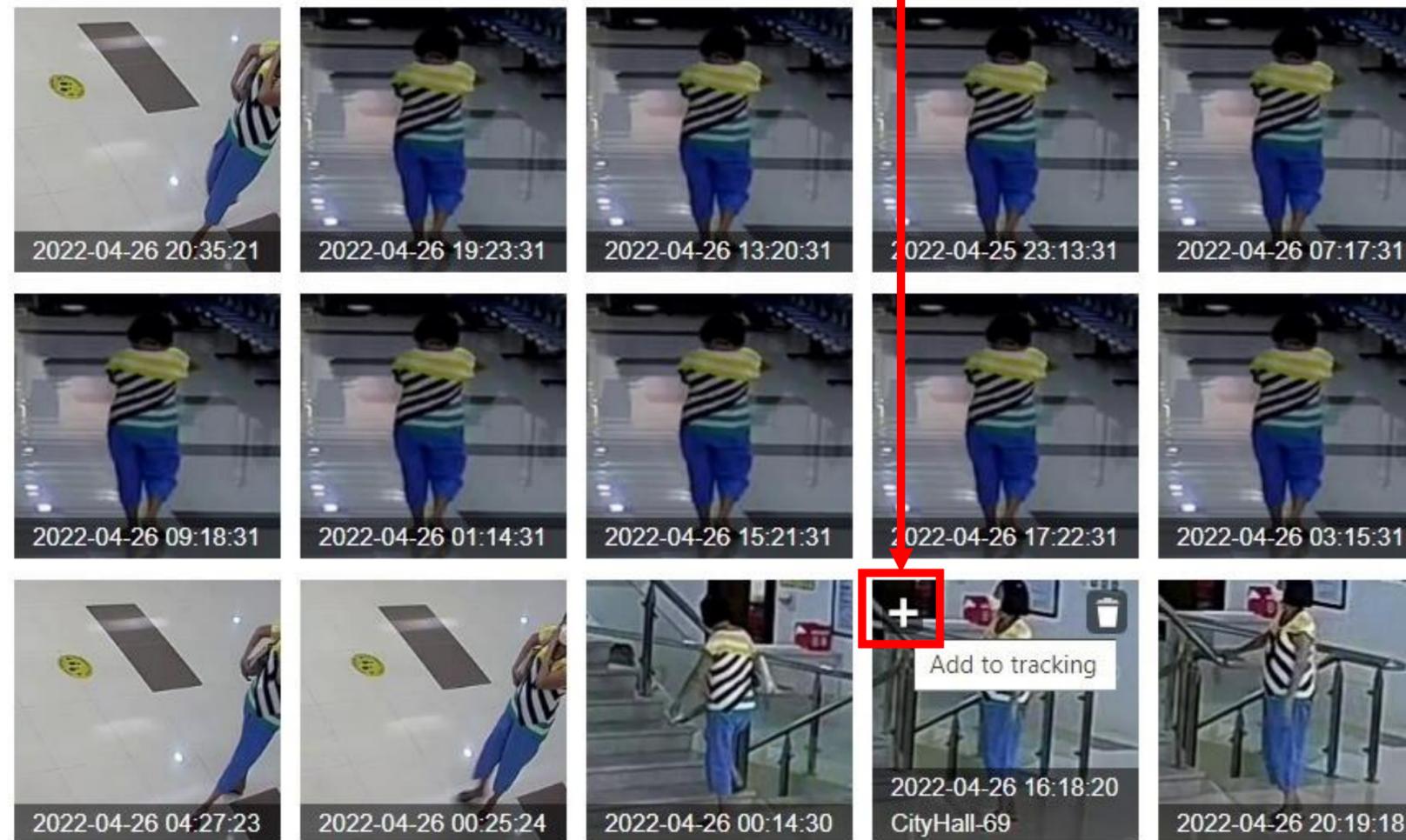
**Refine** Cross Camera Tracking results by removing all images that do not correspond to the person you want to track by clicking the trash can icon that appears when you hover over the snapshot.



[Return to Cross Camera Tracking](#)

# REFINE RESULTS

**Refine** Cross Camera Tracking results by adding different images of the person 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.

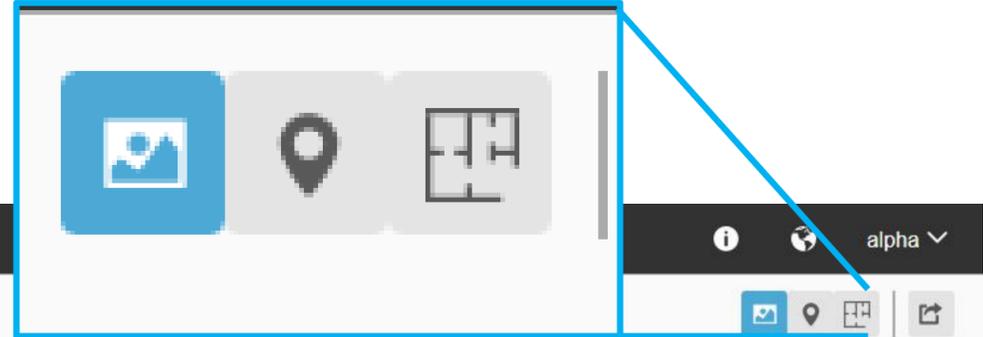
Up to 5 images can be selected

The screenshot shows the Vaidio search interface. At the top, there is a search bar with the text 'VAIDIO > Search > Cross Camera Tracking'. Below the search bar, there are filters for date (2022-04-25 to 2022-04-26), time (00:00 to 23:59), and 'Best Match: 30'. A 'Track' button with a magnifying glass icon is highlighted. Below the search bar, there are five image thumbnails with IDs: 24013474, 23569011, 21438533, 20583833, and 23561975. Below these, there is a summary: 'Total: 30 results in 11.6 second. (Max. display records 100) | Retention Time: 2022-04-20 20:00:00 ~ 2022-04-30 03:53:47'. The main area displays a grid of 24 image thumbnails, each with a timestamp. The thumbnails show a person in a yellow and blue striped shirt in various poses and locations. A 'Search Results' label is placed over the grid. On the right side, there are icons for search, location, and share. At the bottom right, there is a link: 'Return to Cross Camera Tracking'.

[Return to Cross Camera Tracking](#)

# MAP VIEW

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.



VAIDIO > Search > Cross Camera Tracking

2022-04-25 00:00 ~ 2022-04-26

24013474 x 23569011 x 21438533 x

2022-04-20 20:00:00 ~ 2022-04-30 03:53:47

2022-04-26 13:20:31	2022-04-25 23:13:31	2022-04-26 07:17:31	2022-04-26 05:16:31	2022-04-26 20:19:18	2022-04-26 15:32:08	2022-04-26 01:14:31	2022-04-26 01:25:08
2022-04-26 03:15:31	2022-04-26 19:23:31	2022-04-26 23:36:08	2022-04-26 20:35:21	2022-04-26 23:25:31	2022-04-26 11:19:31	2022-04-26 00:14:30	2022-04-26 09:18:31
2022-04-26 15:21:31	2022-04-26 17:22:31	2022-04-26 21:24:31	2022-04-26 04:15:28	2022-04-26 08:16:26	2022-04-26 16:18:20	2022-04-26 12:17:22	2022-04-26 12:31:22

[Return to Cross Camera Tracking](#)

# MAP VIEW



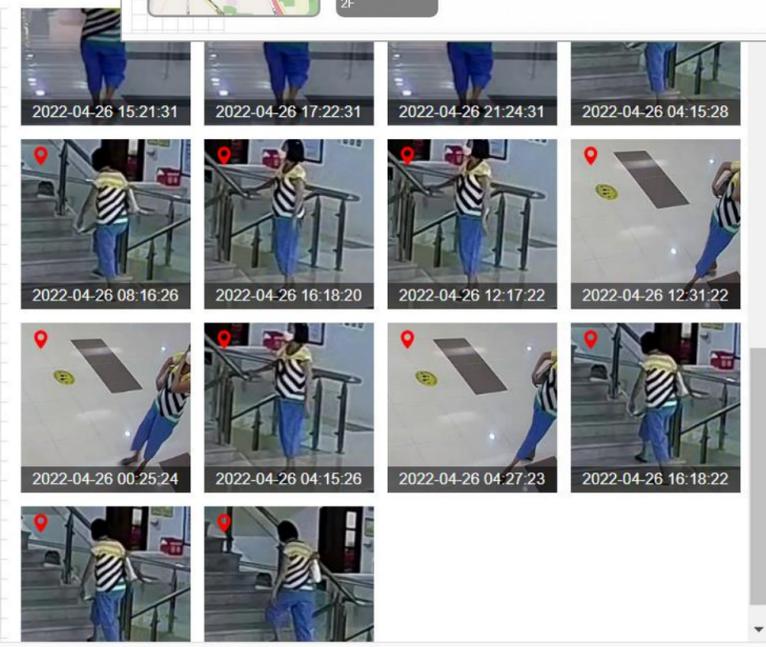
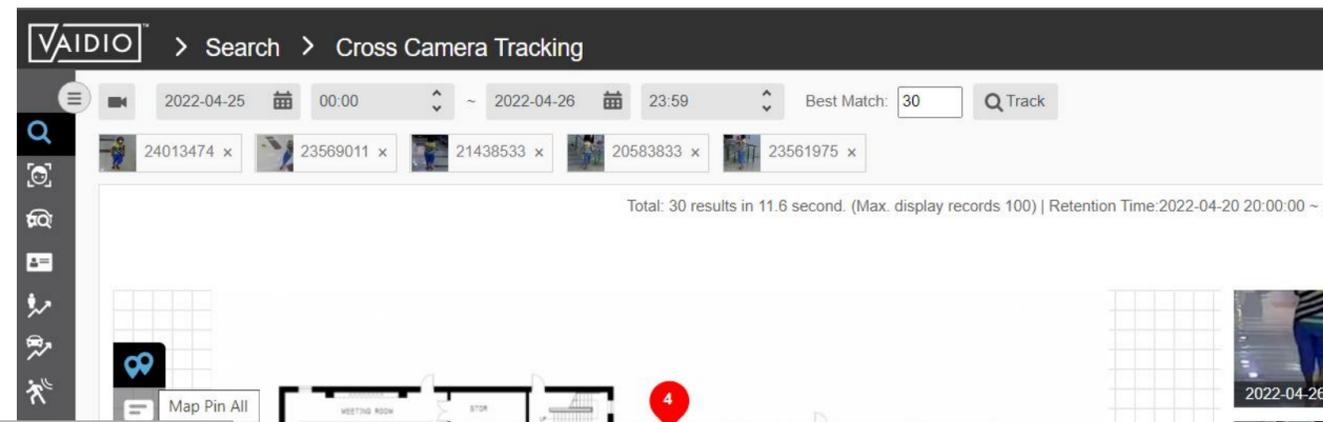
Click the Map Pin All button to bring up thumbnails of the snapshot. The user can scroll through these images using the right and left arrows that appear when hovering over the image



Click the map logo to see the locations of the snapshots and how many there are in each location



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



[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 IronYun Sales Engineering team will configure the format in the software license. For other forms of identification cards, please contact your IronYun 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 IronYun or any other 3<sup>rd</sup> 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

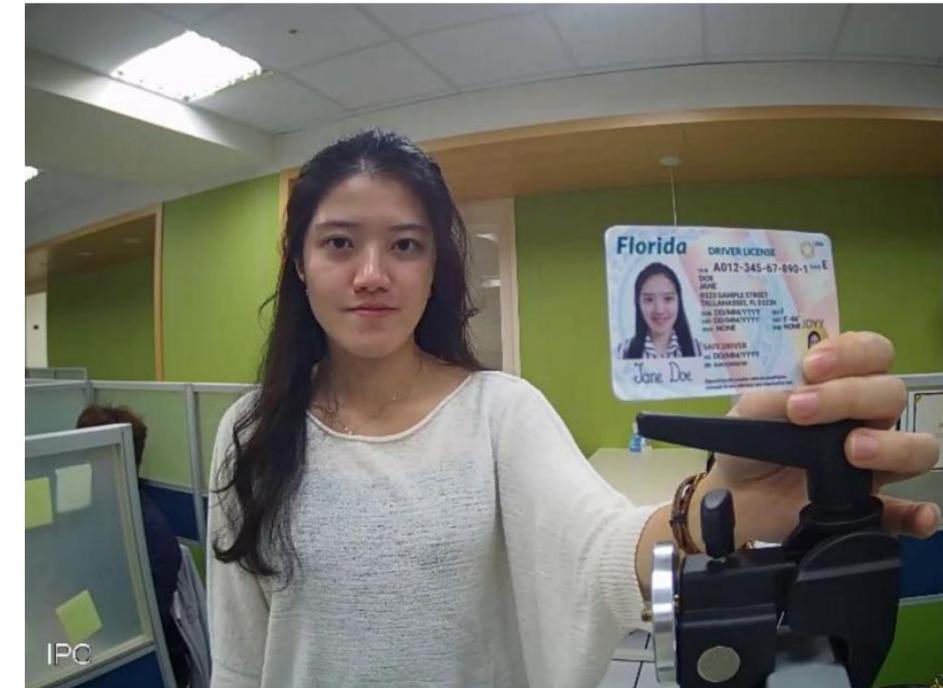
IPC

Name  
Identity Recognition ROI

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

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

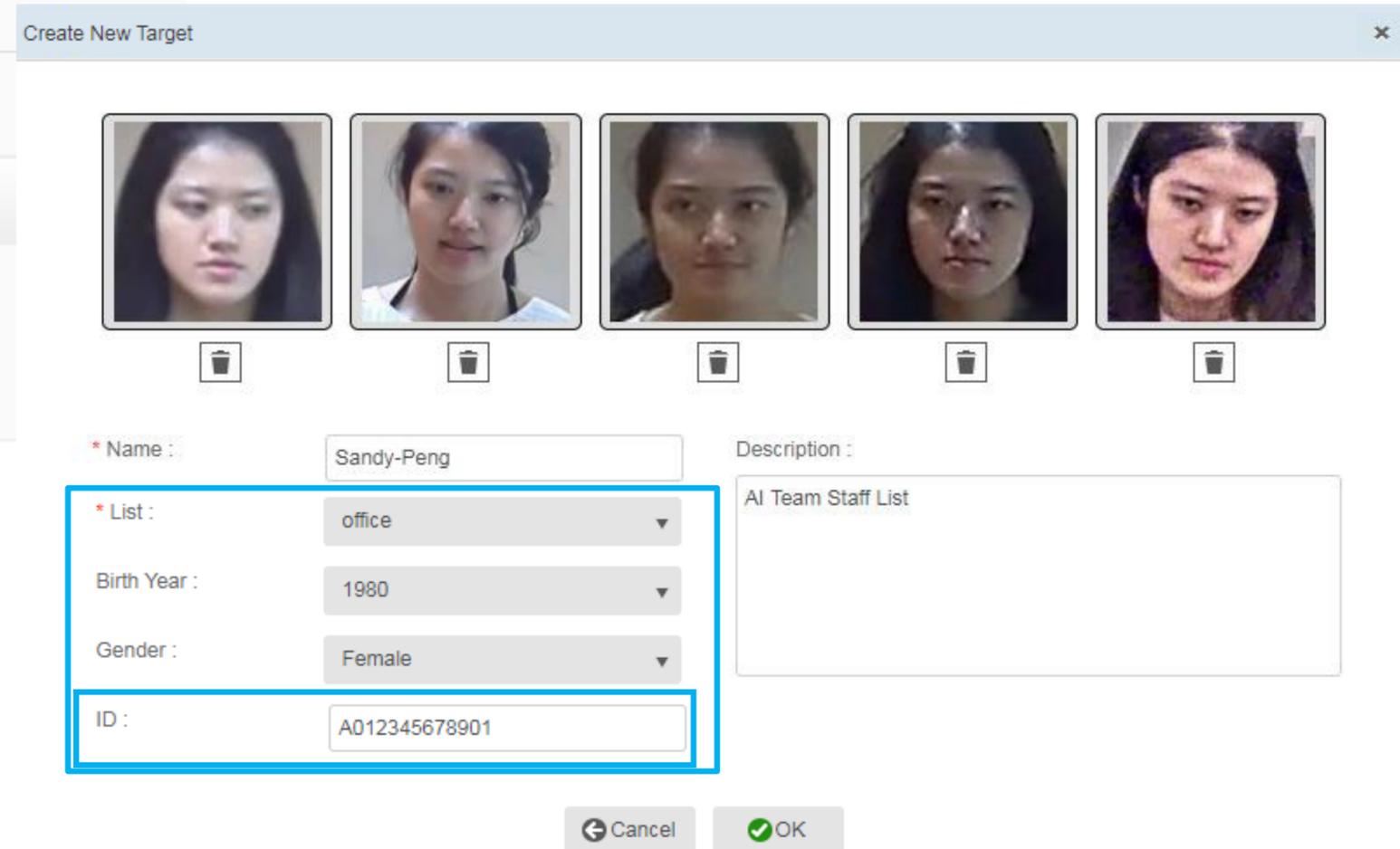
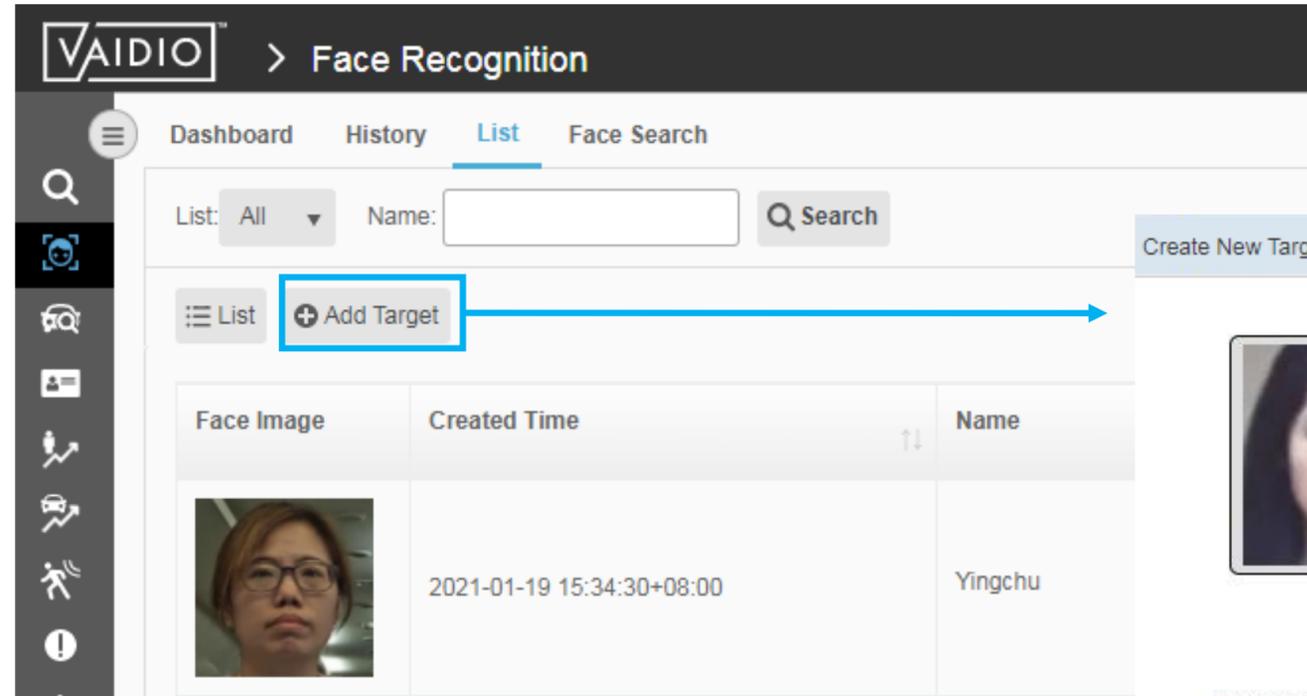
## Sample



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



1. Go to the "List" tab under Face Recognition.
2. Add Target
3. input the ID number.

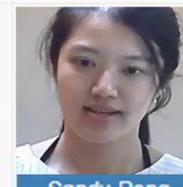
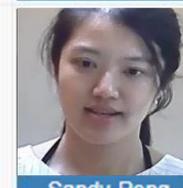
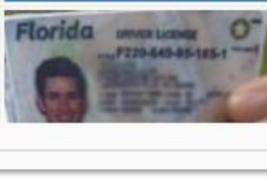
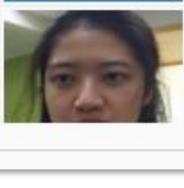
[Return to Identity Verification](#)

# DASHBOARD — REAL-TIME DETECTION


>
Identity Recognition

admin

Dashboard
History

ID Scan	Face Detected	Matched Face	Time
 A012-345-67-890-1	 Access Denied		2021-01-26 16:05:59
 A012-345-67-890-1	 Access Denied		2021-01-26 15:21:10
 A012-345-67-890-1	 Access Granted	 Sandy-Peng List : office ID : A012-345-67-890-1 Description :	2021-01-26 15:20:35
 A012-345-67-890-1	 Access Granted	 Sandy-Peng List : office ID : A012-345-67-890-1 Description :	
 P220-649-95-165-1			2021-01-26 15:17:27

Create New Target
✕







\* Name :

\* List :

Birth Year :

Gender :

ID :

Description :

Cancel OK

IR testing

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.

[Return to Identity Verification](#)

# DASHBOARD — REAL-TIME DETECTION (CONT.)

The screenshot displays the VAIDIO Identity Recognition History dashboard. At the top, there's a navigation bar with 'VAIDIO' and 'Identity Recognition'. Below it, a sidebar contains various icons. The main area shows a table with columns: ID Scan, Face Detected, Matched Face, and Time. Two rows of scan results are visible, both for 'Sandy-Peng' with ID 'A012-345-67-890-1'. A modal window is open over the first row, showing fields for Access (Granted), Name (Sandy-Peng), List (All), and ID. The modal also has Cancel and Add buttons.

ID Scan	Face Detected	Matched Face	Time
		 Sandy-Peng List : office ID : A012-345-67-890-1 Description :	2021-
		 Sandy-Peng List : office ID : A012-345-67-890-1 Description :	2021-

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

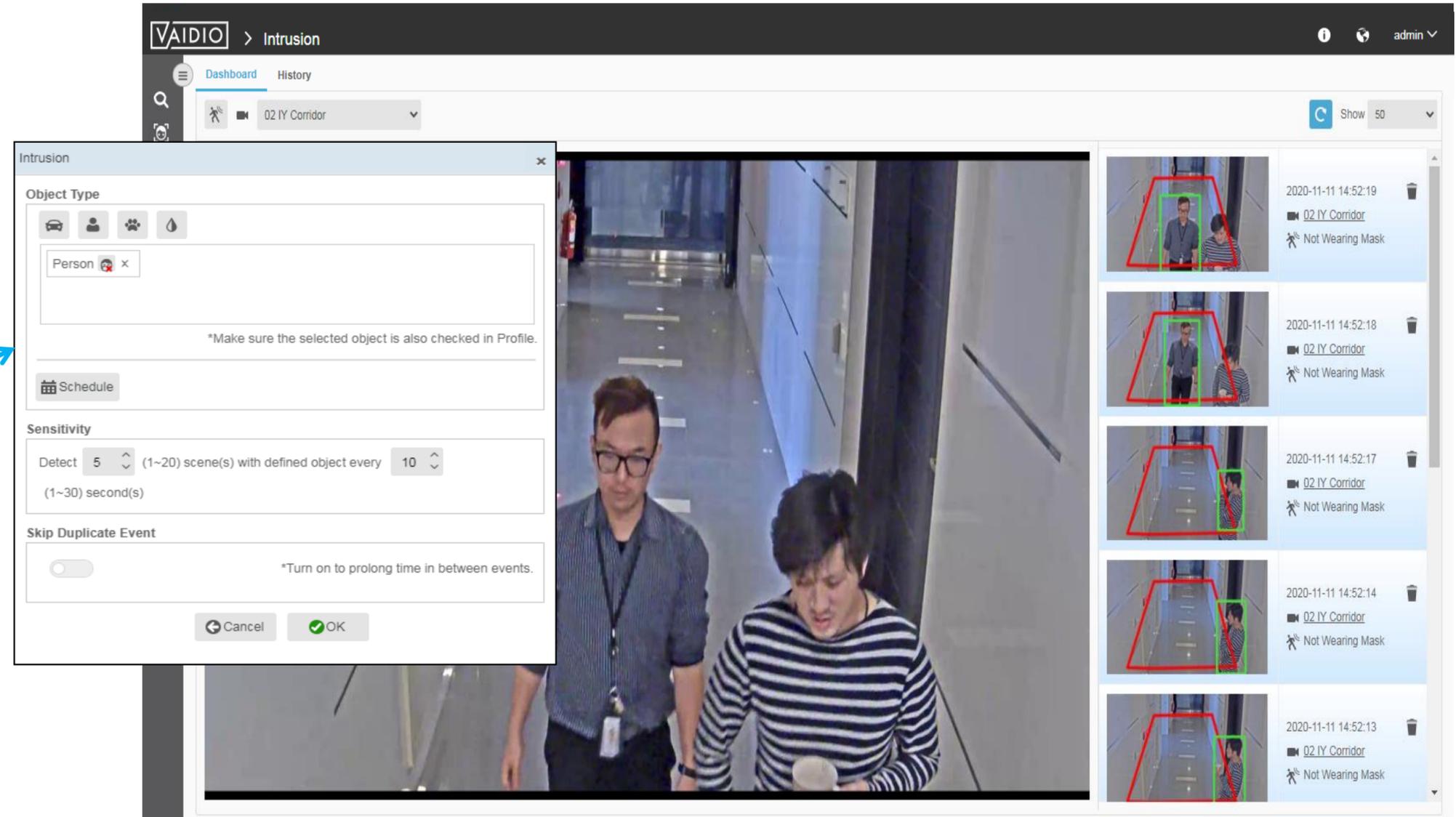
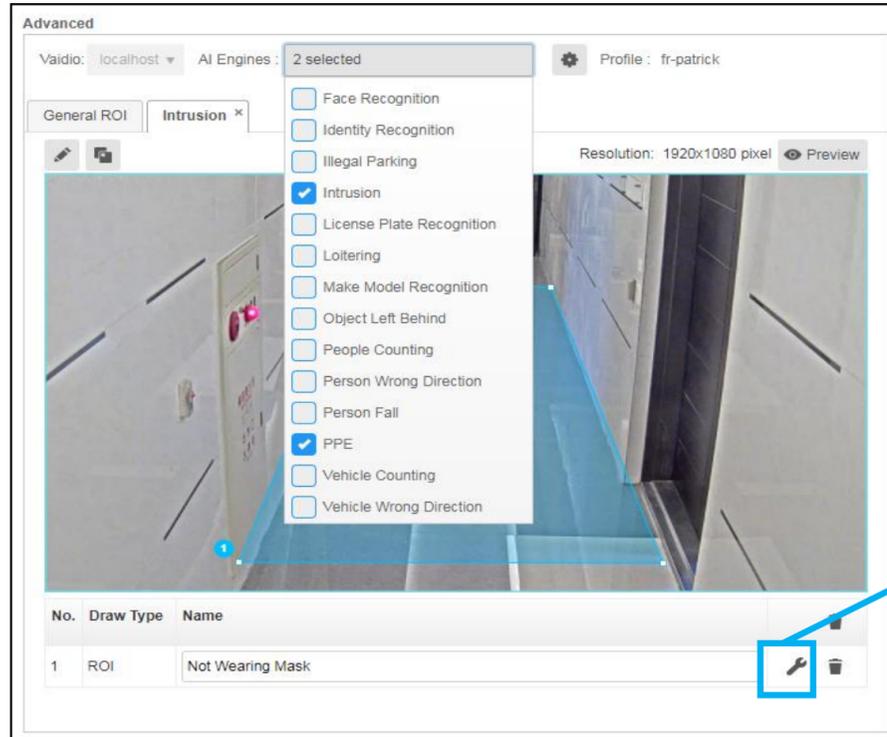
Person

Face

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

[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 by Intrusion Detection

Advanced  
Vaidio: localhost AI Engines: 2 selected Profile: fr-patrick

General ROI Intrusion x

Resolution: 1920x1080 pixel Preview

Add Alert

Alert Name

Define Rule

Alert Type: Intrusion

Select ROI 4 Cameras, 4 ROIs

Schedule

Intrusion List

02 IY Corridor	
<input checked="" type="checkbox"/>	No. ROI Name
<input checked="" type="checkbox"/>	1 Not Wearing Mask
IronYun Corridor	
<input type="checkbox"/>	No. ROI Name
<input type="checkbox"/>	1 people

OK

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

## 2. PPE Alert by Video Search

Add Alert

Alert Name

Define Rule

Alert Type: Video Search

10

Type: Person

Schedule

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**

---

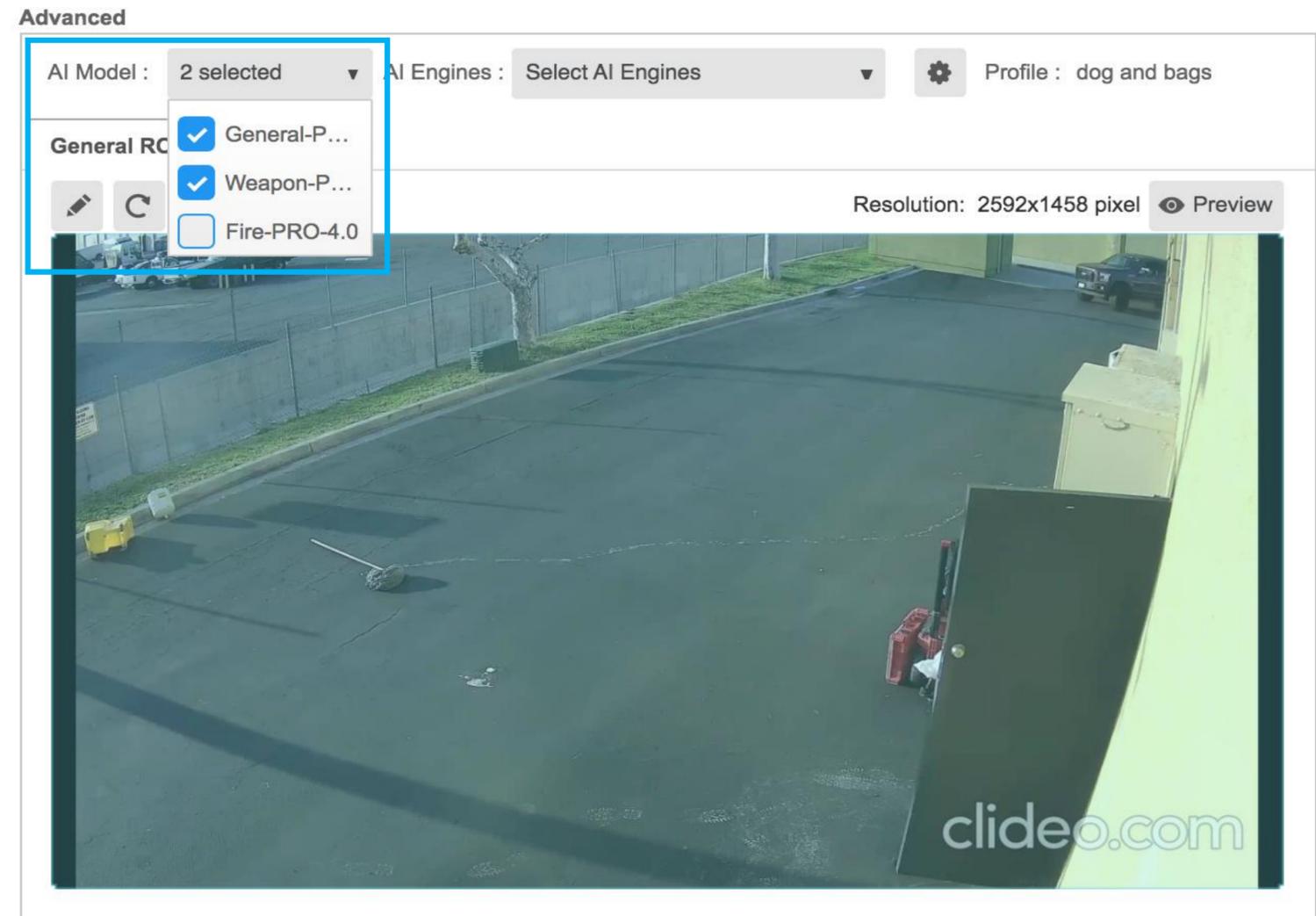
- [Activate AI Model](#)
- [Weapon Detection Results](#)
- [Fire Detection Results](#)

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# ACTIVATE AI MODEL

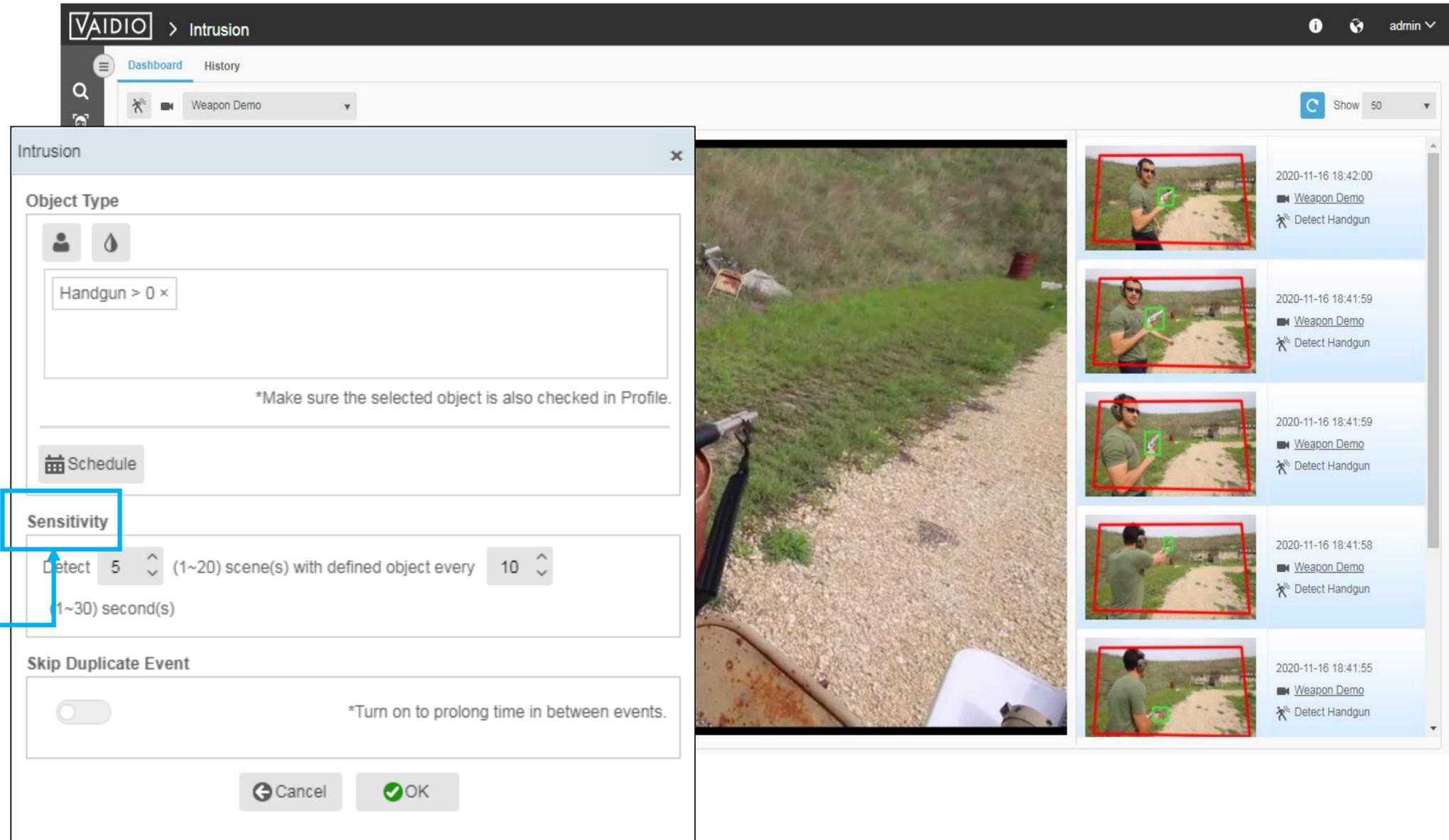
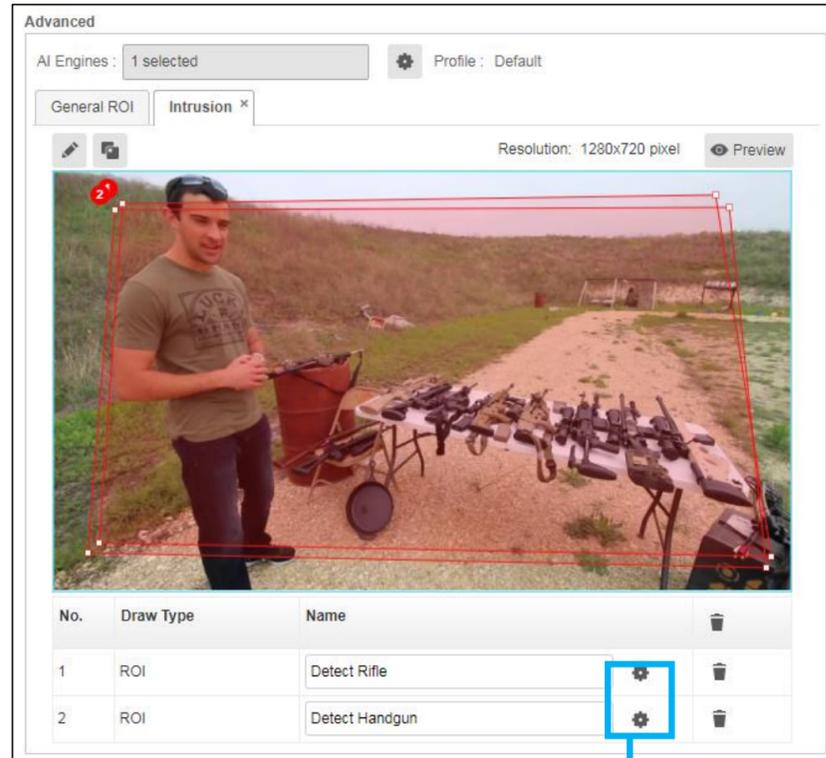
## Weapon/Smoke & Fire Detection

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.

The image shows a multi-part interface for configuring and monitoring fire detection. On the left, the 'Advanced' camera settings window is open to the 'Intrusion' tab. It shows a live camera feed of a traditional Korean courtyard with a red bounding box (ROI) drawn over a portion of the scene. Below the feed is a table of configured intrusion rules:

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

On the right, the 'Intrusion' configuration dialog is open, showing 'Object Type' set to 'Fire' and 'Smoke'. The 'Sensitivity' section is set to 'Detect 3 (1-10) scene(s) with defined object every 4 (1-30) second(s)'. The 'Skip Duplicate Event' toggle is turned off. In the background, the 'Intrusion Dashboard' displays a list of real-time alerts with corresponding video thumbnails and timestamps.

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](#)

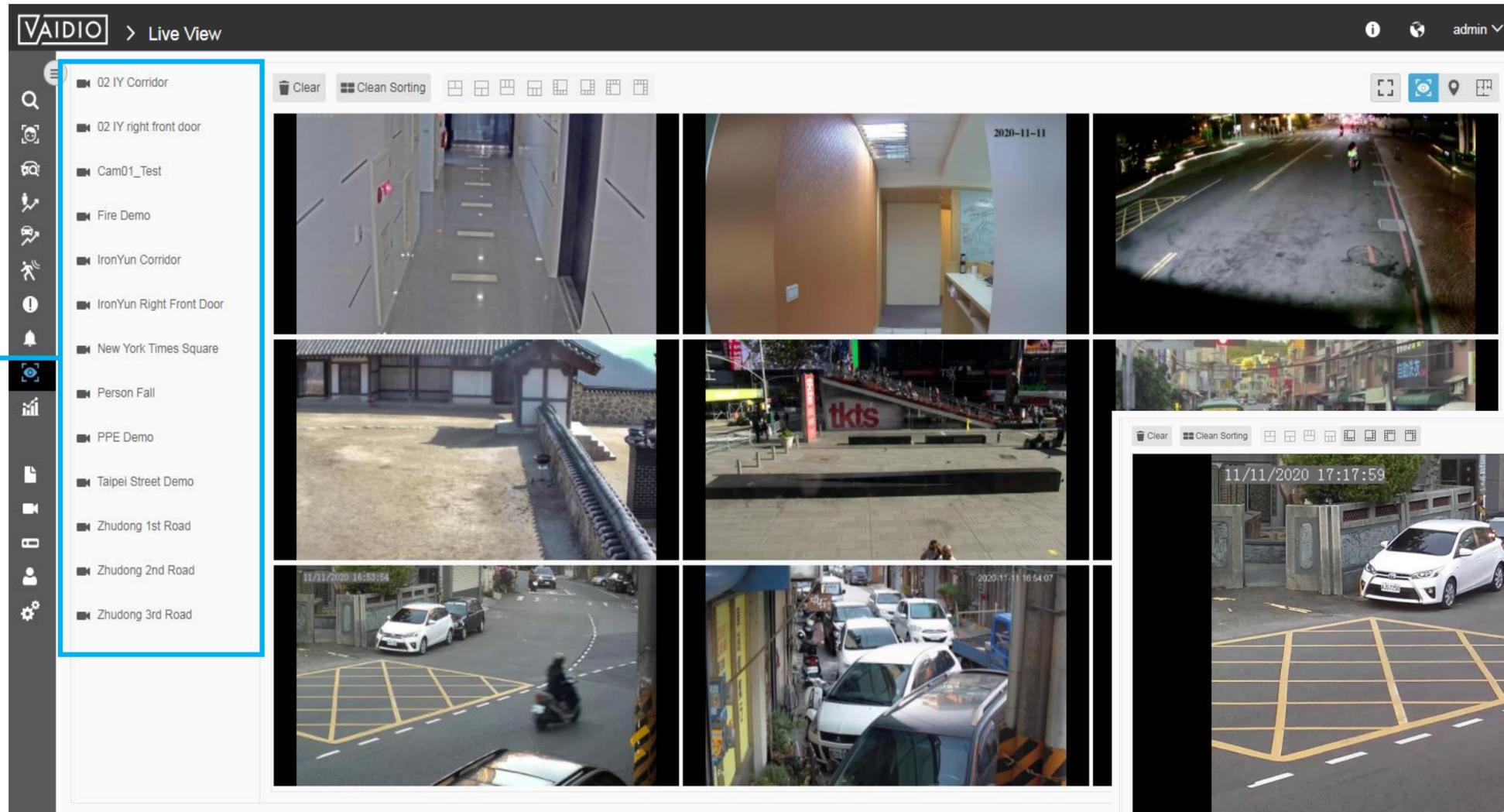
## LIVE VIEW

---

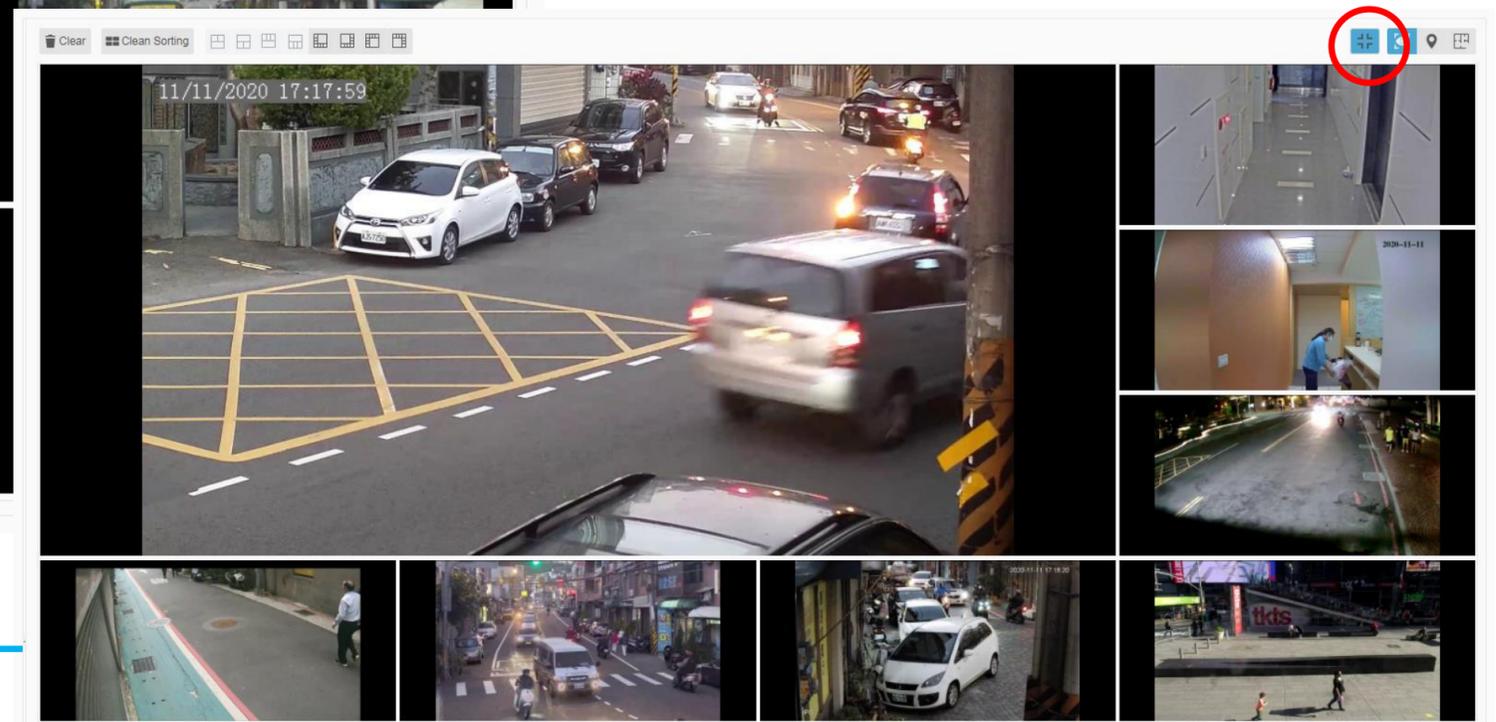
- [Live View as Video Wall](#)
- [AI Tracking](#)

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# LIVE VIEW AS VIDEO WALL



Click the "Full Screen" icon to view live view as Video Wall

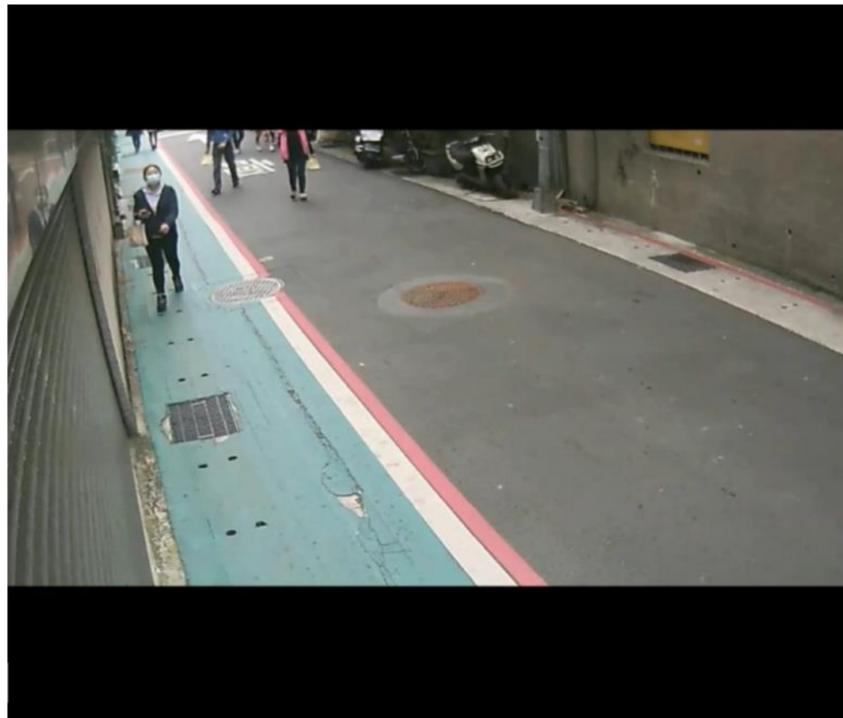


Enable the user to add multiple cameras and monitor the events live on the same screen. The users can adjust the size and location of the scenes to create the preferred viewing layout or apply the pre-set format for the live view.

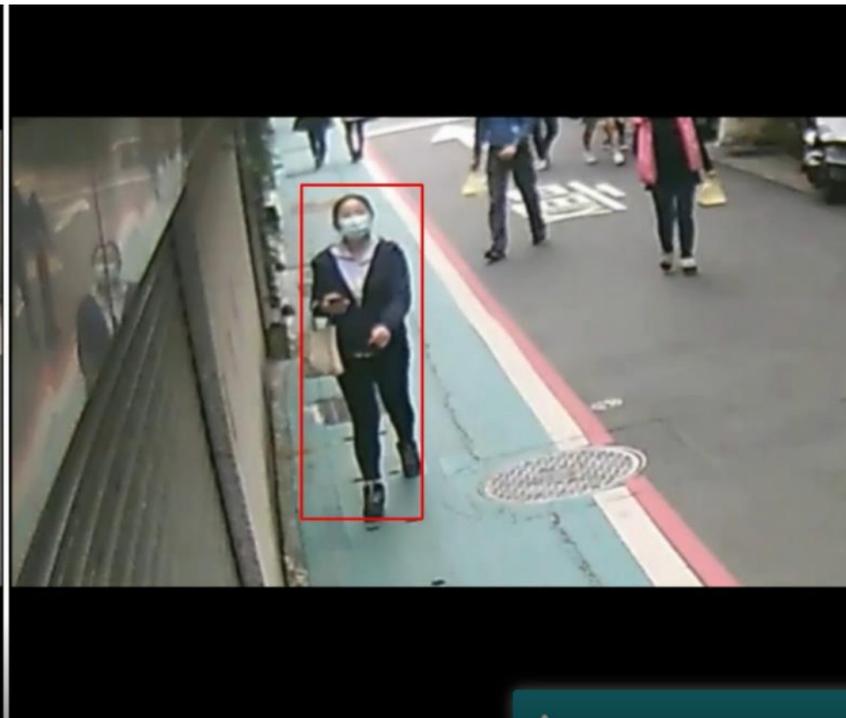
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# AI TRACKING

AI Tracking OFF  
(normal view)



AI Tracking ON  
(zoom-in view)



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

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

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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

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

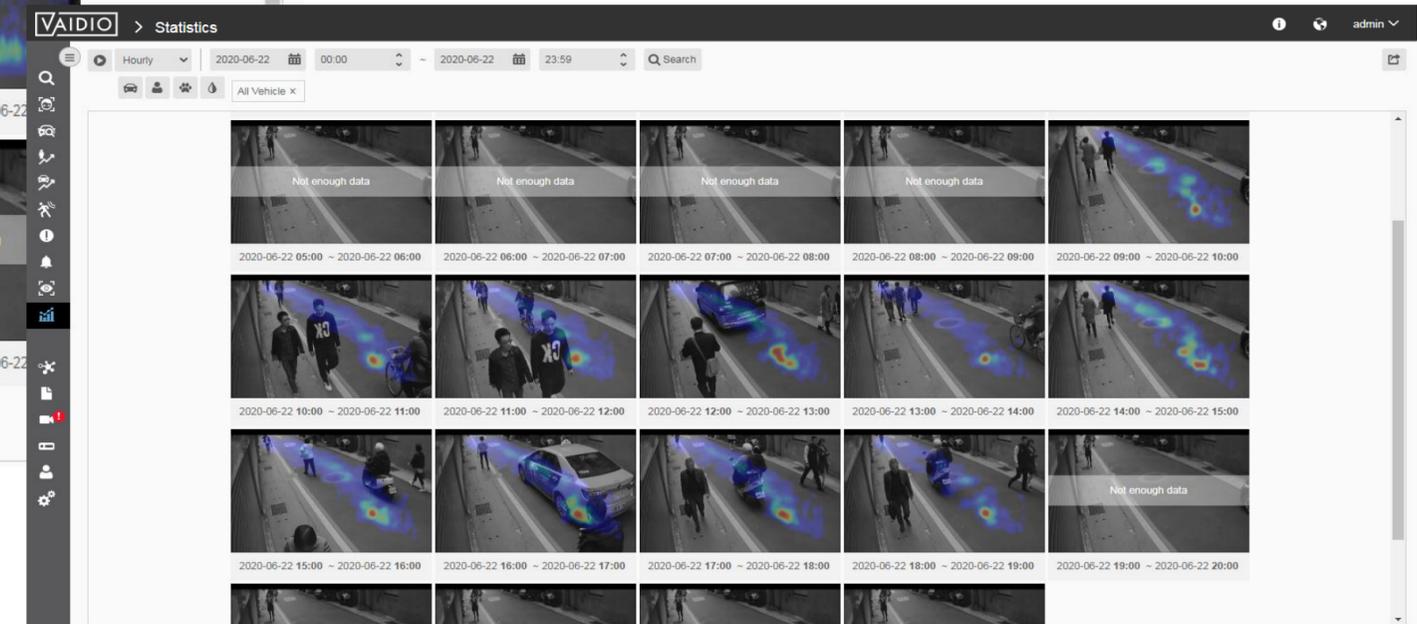
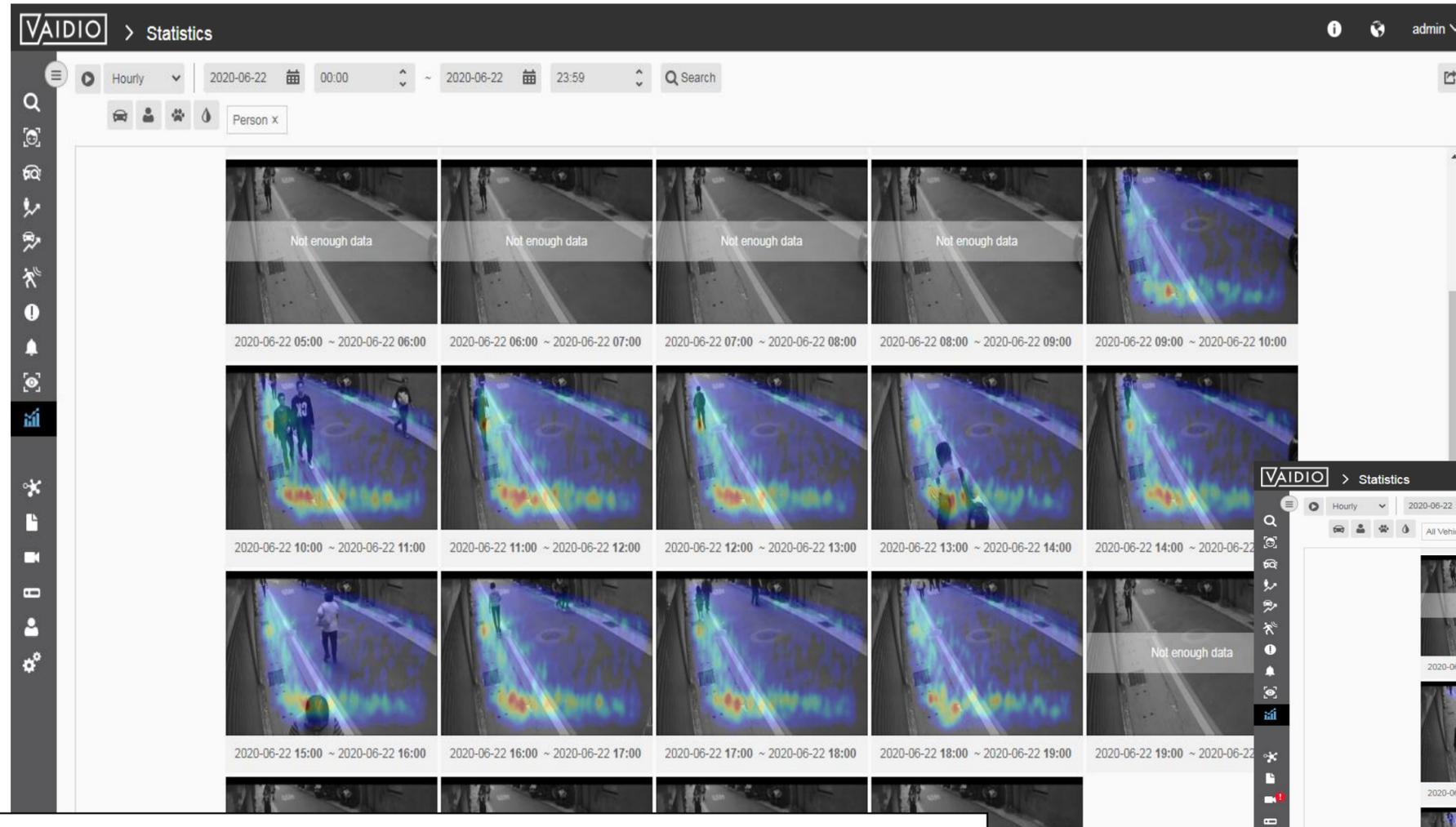
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# HEATMAP

## 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 IronYun 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

The screenshot shows the Vaidio Demographic interface. At the top, there are tabs for 'Heatmap' and 'Demographic'. Below the tabs, there are controls for video source selection, including a camera icon, a 'Charts' button, and date/time filters (2021-05-21 00:00 to 2021-05-21 23:59). A search bar is also present.

The 'Source List' window is open, showing a 'Cluster' dropdown set to 'All'. The 'Search for' dropdown is set to 'FR Age & Gender'. Below this, there is a table of camera sources:

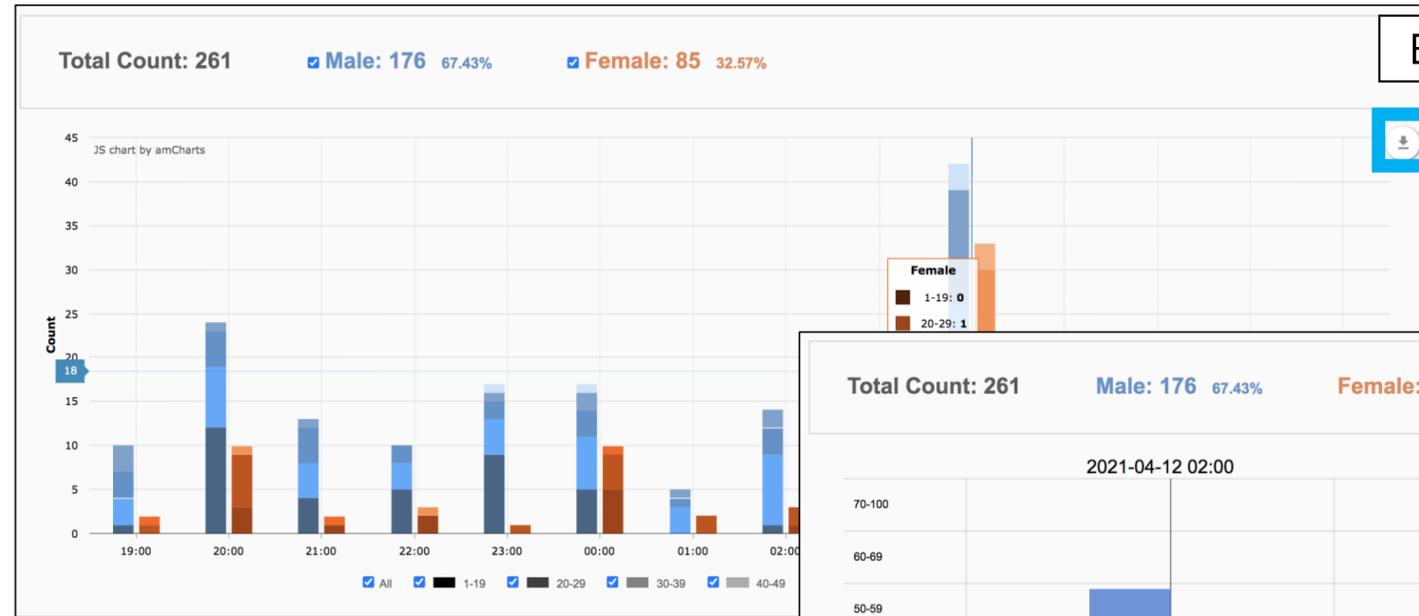
✓	Camera Name
✓	IronYun - Right Front Door
✓	Demo - Person search

At the bottom of the 'Source List' window are 'Cancel' and 'OK' buttons.

The 'Charts' window is also open, showing a 'Data Chart' section with three chart options: 'Population Pyramid', 'Bar Chart', and 'Pie Chart'. The 'Pie Chart' is selected. Below the chart options, there is a 'Data Source' dropdown set to 'Age' and 'Gender'. At the bottom of the 'Charts' window are 'Cancel' and 'OK' buttons.

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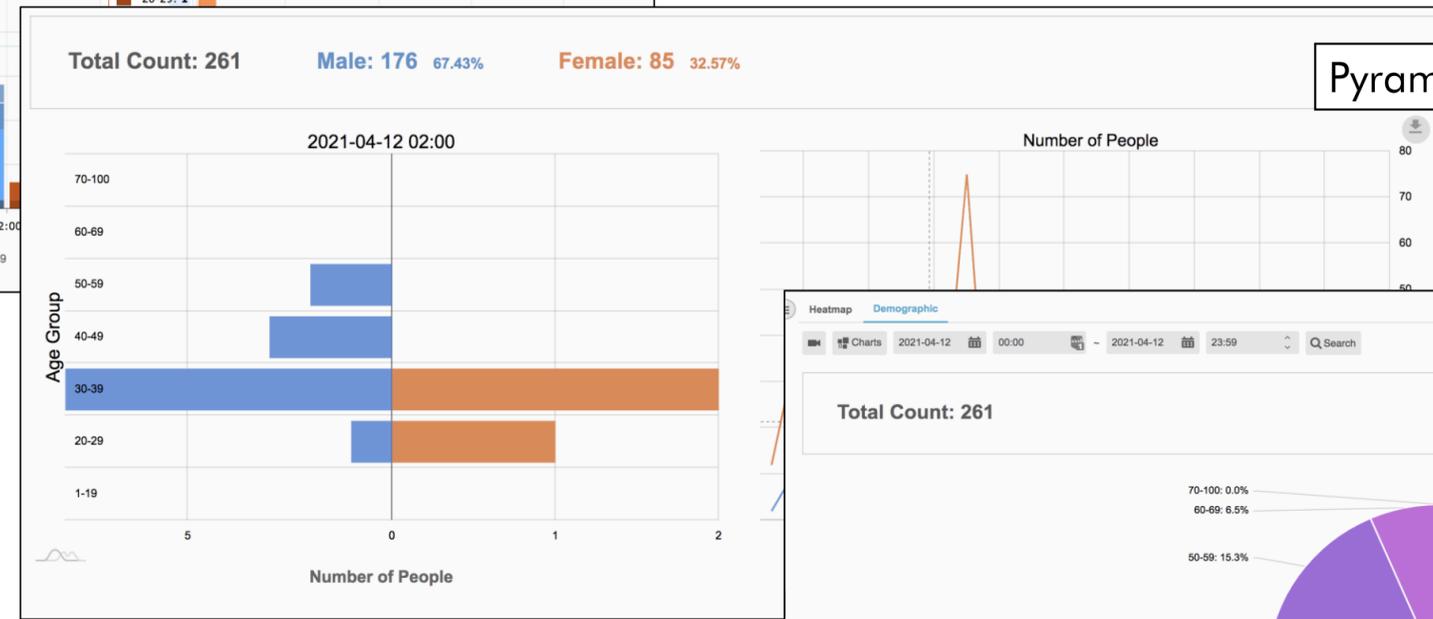
# DEMOGRAPHIC CHART TYPES



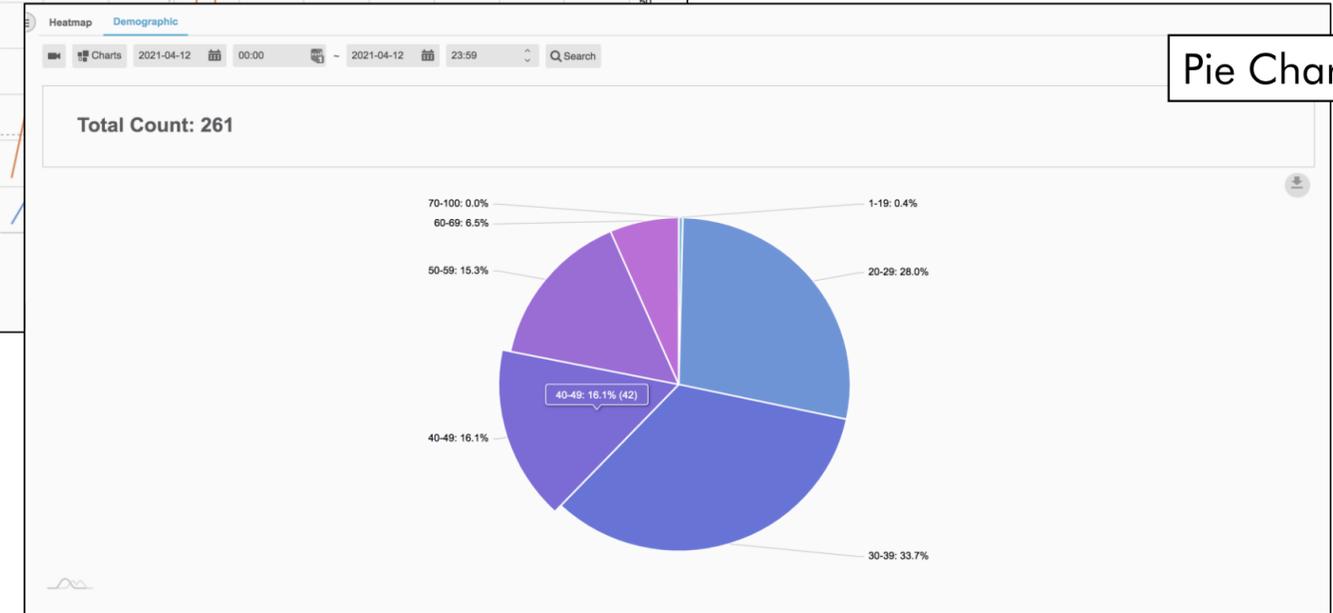
Bar Chart



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

Click to export data in .xlsx format

The screenshot shows the VAIDIO interface for demographic statistics. At the top, there's a navigation bar with 'VAIDIO > Statistics' and a user profile 'admin'. Below that, a secondary bar shows 'Heatmap Demographic' and a date range filter for '2021-05-21' from '00:00' to '23:59'. A search bar is also present. The main content area displays summary statistics: 'Total Count: 75', 'Male: 54 72.00%', and 'Female: 21 28.00%'. Below this is a table with columns for 'Age Group', 'Male', and 'Female'. A vertical sidebar on the left contains various navigation icons. Two callout boxes with arrows point to the 'List' icon and the 'Export' icon in the top right of the main content area.

Age Group	Male	Female
Age 1-19	0	0
Age 20-29	13	4
Age 30-39	38	9
Age 40-49	3	5
Age 50-59	0	3
Age 60-69	0	0
Age 70-100	0	0

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**THANK YOU**

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