



Web Guide

Extension software (AI People Detection)

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1 Introduction

This manual explains how to register the function extension software/AI People Detection application AI People Detection (hereinafter referred to as "this product") to an AI network camera (sold separately, hereinafter referred to as "camera"), the settings required before starting operation, and how to operate it during operation. Since this product is intended to be used after being registered with the camera, be sure to also read the instruction manual for your camera before using it. Also, some of the setting screens shown in this manual may differ depending on the model of your camera and the version of i-PRO Configuration Tool (hereinafter referred to as "iCT") you are using.

1.1 Product Overview

This product is software for more convenient use of the camera. You can use the following functions by installing the product on the camera.

- The best shot determination function for people and attribute identification function notify the person's information to the i-PRO Active Guard.



- This product is required for each camera.

- Refer to the following URL for information on the compatible models and software versions of this product.

→ [Equipment compatibility](#) <C0103>

※<Control number: Cxxxx> The number used when searching for the appropriate information on our support website.

1.2 Features

1.2.1 AI People Detection

- This product identifies the attributes of the detected person, extracts the best shot image and attribute information, and sends the best shot image and attribute information to the

i-PRO Active Guard.

- This product has the following features:
 - It can identify 11 items and 46 types of personal attributes.
 - You can send best shot images and attribute information for up to 20 people.
 - To prevent false detection, you can set up to eight mask areas.

1.3 Before using this product

The following cases may cause difficulty in detecting a subject or motion, or cause lost or false alarms or reduce measurement accuracy.

- The image brightness is low, such as at night.
- When the input video is black and white.
- The white balance of the video is incorrect.
- There is backlighting in the video.
- There is strong external light in the video.
- The subject is moving too fast.
- Subjects are subject to uneven lighting, with some parts illuminated and some parts shaded.
- The subject is too small or too large.
- Part of the subject is hidden.
- The subject is not upright; for example, they are crouching, lying down, or collapsed.
- The subject's arms or legs are bent sharply.
- Depending on the type and manner of wearing of the subject's accessories or clothing, the camera may not be able to correctly identify the subject.
- The subject may not be identified correctly due to their belongings.
- The subject's face is not facing the camera.
- The subject is not in focus.
- Posters with dolls and people appear in the footage.
- There are too many subjects.
- Multiple people crossing or crowding together.
- There are water droplets or dirt on the camera dome or lens.
- The camera is shaking.
- The weather is extremely bad.

Other cautions are explained below.

1 Introduction

1.3 Before using this product

- If there are factors that cause false detections on the screen, you can reduce false detections by setting a mask area.
- The message IDs (decimal numbers) for custom alarm notifications are: Matching List Alarm List 1: "118", List 2: "119", List 3: "120", List 4: "121".
- Please update to the latest firmware to prevent unauthorized access by third parties, infringement of privacy and portrait rights, information leaks, and unauthorized operation.
- We shall not be liable for any inconvenience, damages or losses incurred as a result of setting up this product.
- We shall not be held responsible for any accidents or damages that may occur.

2 Preparation

The steps up to operation are as follows. This chapter describes steps 1, 2, and 3.

1. Check compatible models and software versions
→[2.1 Check compatible models and software versions](#)
2. Install the product
→[2.2 Install the product](#)
3. Configure the required settings.
→[3 Basic settings](#)
4. Operation will begin.

2.1 Check compatible models and software versions

Check the compatible model and software version in the following URL.

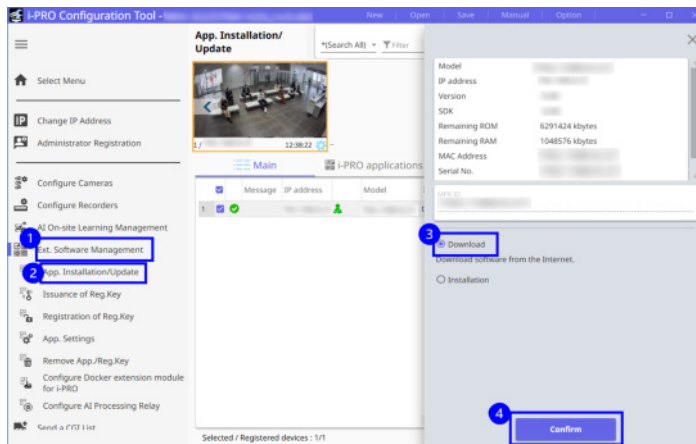
→[Equipment compatibility <C0103>](#)

2.2 Install the product

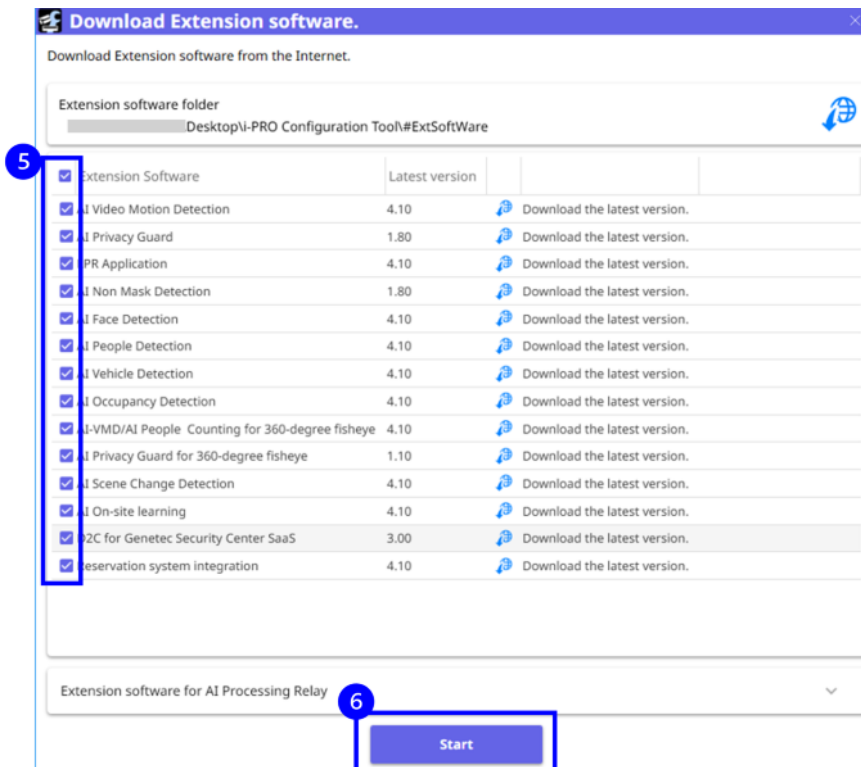
Download the product and install it on your camera according to the following procedures.

1. Download this product
→[2.2.1 Download this product](#)
2. Installing the product
→[2.2.2 Installing the product](#)

2.2.1 Download this product



1. Open iCT and click "Ext. Software Management" in the left menu.
2. Click App.installation/Update
3. Check "Download".
4. Click the "confirmation" button.



5. Check the extension software you want to download. In this procedure, check only "AI People Detection"
6. Click the Start button.

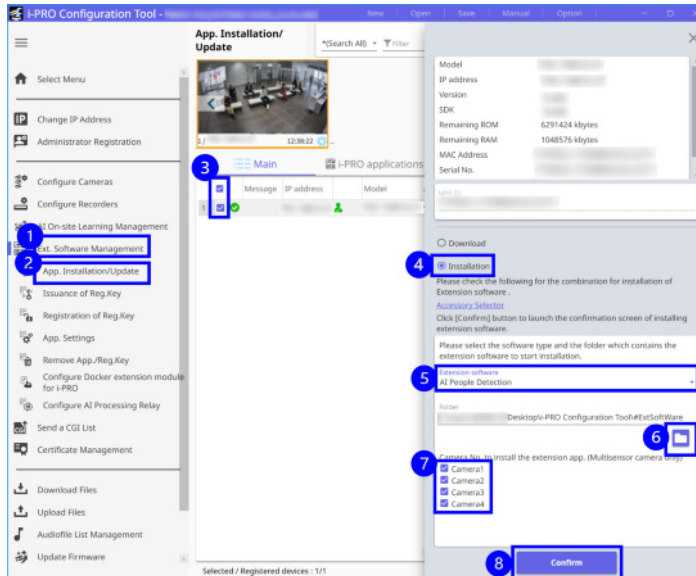
2 Preparation

2.2 Install the product



- The download destination for the function extension software is "Desktop > i-PRO Setting Tool > #ExtSoftWare" on the computer where iCT is installed.

2.2.2 Installing the product



Please check the camera's [Remaining ROM capacity] and [Remaining RAM capacity]. If there is insufficient capacity, uninstall any other installed extension software. For instructions on how to uninstall, please refer to the operation and settings section of the camera's instruction manual.

1. Open iCT and click "Ext. Software Management" in the left menu.
2. Click App.installation/Update
3. From the device list, select the camera on which you want to install the extension application.
4. Check "Install".
5. Select "AI People Detection" from the "Extension Software" pull-down menu on the right side of iCT.
6. Please enter the folder specified here.
→[2.2.1 Download this product](#)
7. For multi-sensor cameras, select the camera number for which you want to install the extension software. For cameras other than multi-sensor cameras, no selection is required.
8. Click the "confirmation" button.

Follow the iCT guide to install the app. The "AI People Detection" app will be installed.



- Do not turn off the camera during installation.
- Do not perform any operations during installation until the installation is complete.

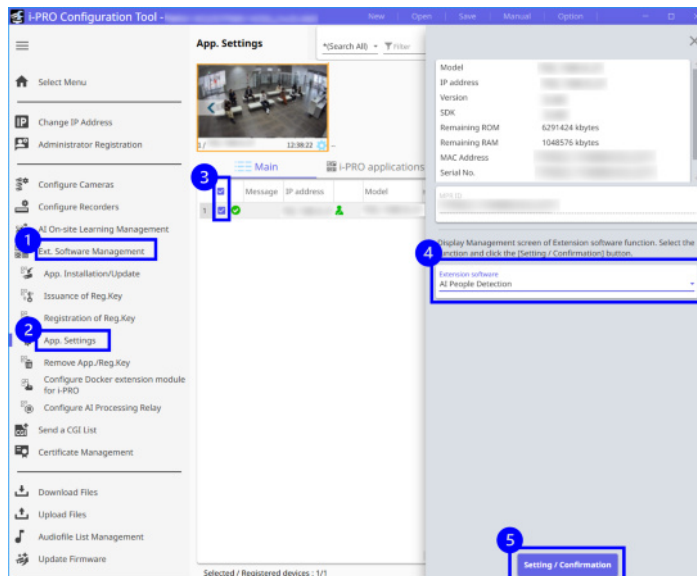
3 Basic settings

The basic setting procedure is as follows.

1. Camera adjustment
→ [3.1 Camera adjustment](#)
2. Checking the people detection status
→ [3.2 Checking the people detection status](#)
3. Check the best shot image and attribute information
→ [3.3 Check the best shot image and attribute information](#)

3.1 Camera adjustment

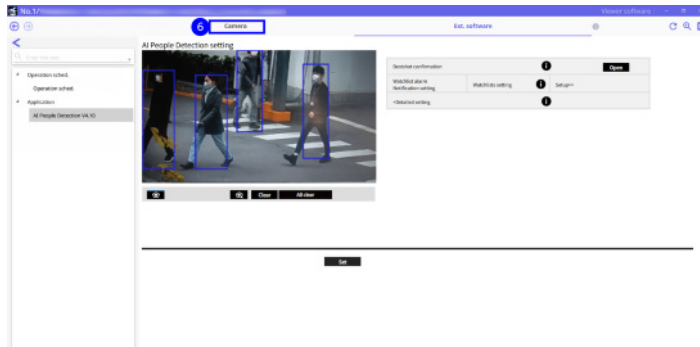
3.1.1 Open the settings screen



1. Open iCT and click "Ext. Software Management" in the left menu.
2. Click "App Settings".
3. From the device list, check the camera for which you want to set up the extension software.
4. Select "AI People Detection" from the "Extension Software" pull-down menu on the right side of iCT.

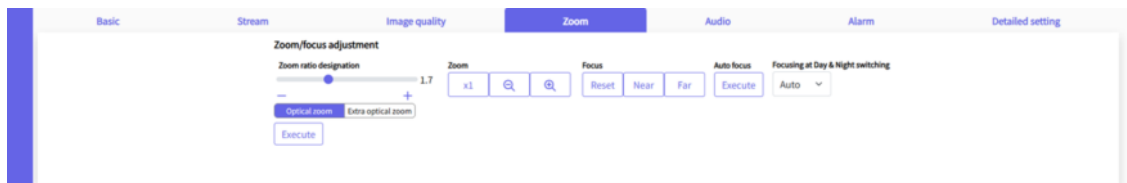
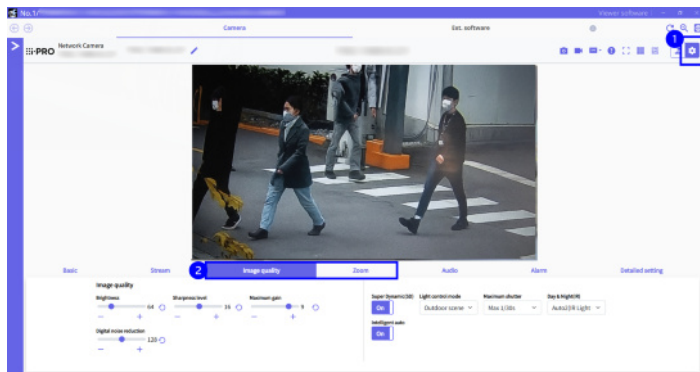
3 Basic settings
3.1 Camera adjustment

5. Click the "setting/confirmation" button.



6. Click Camera.

3.1.2 Camera image quality and zoom settings

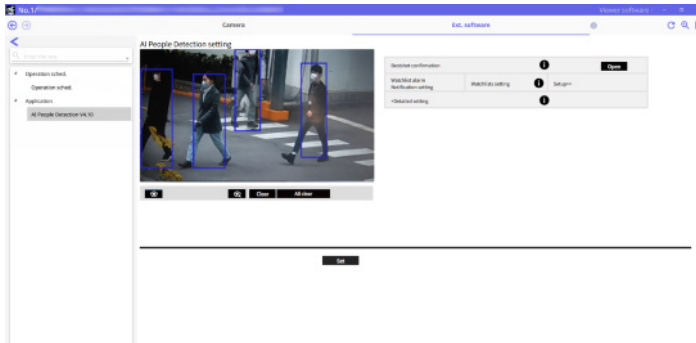


1. Click the Settings icon in the top right corner.
2. Click "Image quality" and "Zoom" to adjust the camera. Adjust the following items:
 - Adjusting the brightness
 - White balance adjustment
 - Adjusting the size of the subject in the field of view
 - Adjusting the focus



- If "Super Dynamic" is set to "On", color shifts may occur.
- Some cameras may require manual zoom/focus adjustment.

3.2 Checking the people detection status



While the camera is pointing at a person, check the following points in the video display area of the settings screen.

- Check if people are detected
- Whether the detected person is the recommended size for attribute identification



- For recommended sizes, see the following URL:
→ [Technical Information <C0320>](#)

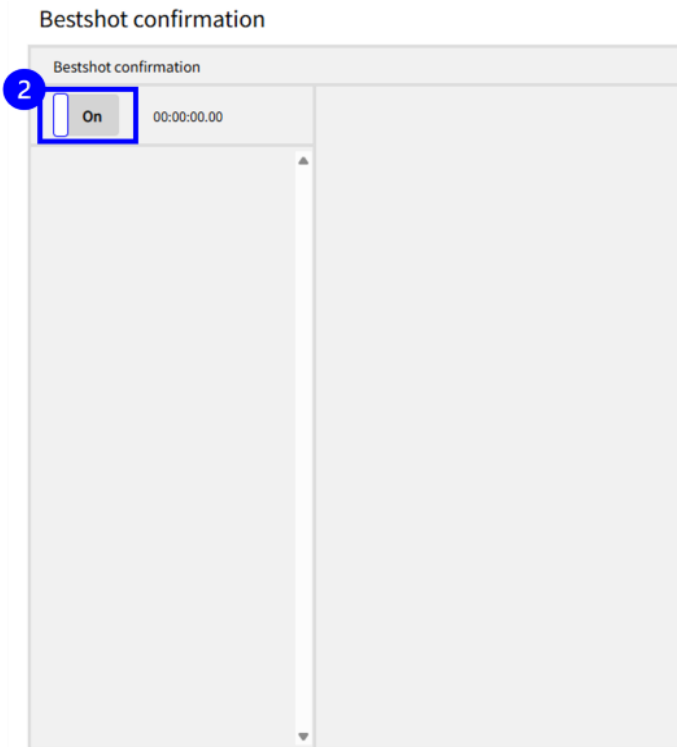
3 Basic settings

3.3 Check the best shot image and attribute information

3.3 Check the best shot image and attribute information



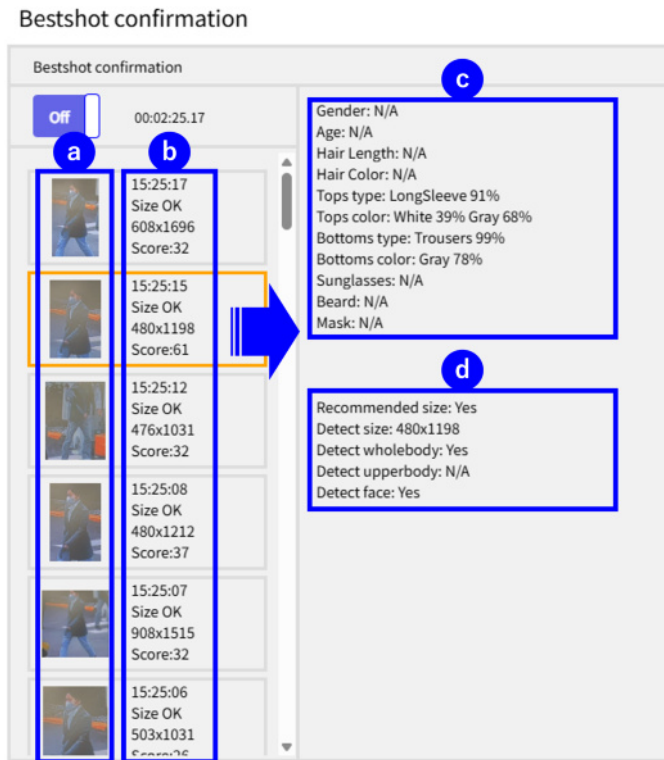
1. Click "Open" on the "Bestshot Confirmation" on the settings screen.



2. When the Best Shot confirmation screen appears, click "On."

3 Basic settings

3.3 Check the best shot image and attribute information



The best shot image will be displayed.

a. **Best shot image**

b. **Best Shots Overview**

- The time when the best shot was taken
- Whether the best shot image size of the person is within the recommended value
 - "Size OK": Within recommended value
 - "Size NG": Outside the recommended value
- Person size
- Detection Score

c. **Attribute information details**

Click on the best shot image to view it.

- Gender (male/female)
- Age (0-10/11-20/21-60/61+)
- Hair Length (short/long/hat)
- Hair color (black/brown/white/gray/gold)
- Tops type (short/long)
- Tops color (black/brown/white/gray/green/red/blue/yellow/orange/purple/pink)
- Bottoms type (short/long)
- Bottoms color (black/brown/white/gray/green/red/blue/yellow/orange/purple/pink)

3 Basic settings

3.3 Check the best shot image and attribute information

- Sunglasses (with/without)
- Beard (with/without)
- Mask (with/without)

d. **Best Shot details**

Click on the best shot image to view it.

- Recommended size
- Detection Size
- Full-body detection results
- Upper-body detection results
- Face detection results

4 Detailed setting

4.1 Mask area settings

Draw and set areas on the live image where object detection will not occur. Up to eight mask areas can be set, with each area having up to 16 vertices. The set mask area is drawn semi-transparently. Default setting: No mask area is set.



Add a new mask area

- (a) Click [Mask Area (Polygon)].
- Click the vertices of the polygon to draw it. When you close the corners, the mask area will be drawn (b).
- (g) Click Set to save the mask area.

Moving the mask area

- (c) Click [Mask Area (Select)].
- Drag the mask area to move it.
- (g) Click Set to save your changes.

Remove mask area

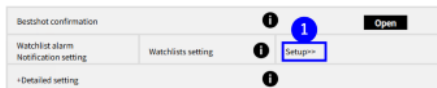
- (c) Click [Mask Area (Select)].
- Select the mask area you want to remove (d).
- (e) Click the [Clear] button.
- (g) Click Set to save your changes.

Delete all mask areas

- (f) Click [All clear].
- (g) Click Set to save your changes.

4.2 Watchlist setting

Set person attributes in a Watchlist, and if a person matching the conditions in the Watchlist is detected, an alarm will be sent. Up to four Watchlists can be created. Configure [Attribute Settings] and [Alarm Settings] for each Watchlist. Please refer to the External Interface Specifications for the interface that supports this setting.



1. Click "Setup>>" for the Watchlist setting.



- This setting can be configured in this product V2.10 or later, and iCT4.1 or later.



Creating a new Watchlist

- (a) Click "+New watchlist".
- Click on the newly added (b) [Watchlist X].
- (c) Configure the Attribute Settings.
 - Select the attributes that will be used as notification conditions for Watchlist alarms. You can select multiple attributes per attribute.
Default: All unselected
- (d) Set the [Alarm setting].
 - [Alarm Notification]

Check this box to be notified of alarms in the selected Watchlist.

Default setting: Checked

- [Alarm message]

Set the alarm message for the selected Watchlist using up to 64 characters. The interface that supports this setting is the original alarm notification.

Default setting: (For Watchlist1) HUMAN ATTRIBUTE MATCH 01

- [Color image only]

Set whether to notify Watchlist alarms only when the input video is color.

Default setting: Off

- [Alarm threshold]

Set the threshold for Watchlist alarms. Setting it to "Low" will trigger an alarm even when the attribute confidence is low, but may increase the chance of false alarms.

Low/Medium/High

Default setting: Medium

- (f) Click Save to save your Watchlist criteria.

Copy and add Watchlist X

- Click the [Copy] icon (h) of the [Watchlist X] you want to copy.
- Click on the newly added (b) [Watchlist Y].
- (c) Edit the [Attribute Settings] and (d) [Alarm Settings].
- (f) Click Save to save your Watchlist criteria.

Watchlist fixes

- Click the (b) [Watchlist X] you want to edit.
- (c) Edit the [Attribute Settings] and (d) [Alarm Settings].
- If you want to clear the Watchlist, click (e) [Clear watchlist]. (c) [Attribute settings] and (d) [Alarm settings] will be reset to the default settings.
- (f) Click Save to save your Watchlist criteria.

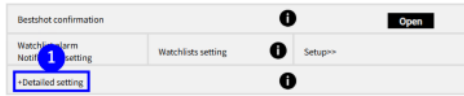
Delete Watchlist X

- Click the [Delete] icon (g) of the [Watchlist X] you want to delete.
- (f) Click Save to save your Watchlist criteria.

Return to [AI People Detection setting]

- (i) Click [Back].

4.3 Detailed setting



1. Click "+Detailed setting" to display the detailed settings.

4.3.1 Bestshot setting

Bestshot setting	Maximum number of bestshot transmission		20
	Upper limit of detection frame size (pixel)		0
	Lower limit of detection frame size (pixel)		100
	Detection threshold		20
	Attribute extraction process from black and white video		<input checked="" type="radio"/> On <input type="radio"/> Off
	Attribute information transmission threshold (periodic transmission)		0.80
	Attribute information transmission threshold (bestshot transmission)		0.20
	Period to become bestshot target (sec)		1.0
	Distance moved to become bestshot target (%)		50
	Attribute extraction for bags and shoes		<input checked="" type="radio"/> On <input type="radio"/> Off
	Suppress Best Shots for the Same Person		<input checked="" type="radio"/> On <input type="radio"/> Off
	Same Person Best Shot Suppression Settings	Suppression Duration for Same Person Best Shots (seconds)	5 (1-10)
		Number of People for Same Person Best Shot Suppression	5 (1-10)
	Add detection frame information to video data		<input checked="" type="radio"/> On <input type="radio"/> Off

- **Maximum number of bestshot transmission**
Select the maximum number of best shot images to send at the same time.
Default: 20
- **Upper limit of detection frame size (pixel)**
Set the upper limit (width) of the person size to be detected.
Default: 0
- **Lower limit of detection frame size (pixel)**
Set the minimum size (width) of a person to be detected.
Default: 100
- **Detection threshold**
Set the detection threshold. The smaller the value, the easier it is to detect people, but there is also a possibility of more false positives.

1 ~ 99

Default: 20

- **Attribute extraction process from black and white video**

Set whether to perform person attribute recognition when the input video is black and white.

Default setting: On

- **Attribute information transmission threshold (periodic transmission)**

Attribute information with a score above the threshold is sent along with periodically sent detection result information.

0.00 ~ 1.00

Default: 0.80

- **Attribute information transmission threshold (bestshot transmission)**

Attribute information with a score above the threshold is sent along with the best shot image.

0.00 ~ 1.00

Default: 0.20

- **Period to become bestshot target (sec)** *Can be set in iCT V2.4 or later.

Set the period of time until a detected subject becomes eligible for Best Shot sending.

0.1 ~ 6553.5

Default: 1.0 (seconds)

- **Distance moved to become bestshot target (%)** *Can be set in iCT V2.4 or later.

Set the distance the detected subject must move before it becomes eligible for Best Shot transmission. Set the percentage of the detection frame width.

1 ~ 65535

Default: 50 (%)

- **Attribute extraction for bag and shoes**

Determine whether to perform attribute classification of shoes and bags.

Default: On

- **Suppress Best Shots for the Same Person**

Configure whether to suppress best shots when the same person temporarily disappears from the camera view, to prevent them from being recognized as a different person.

Note that if multiple similar-looking people appear at the same time, best shots may not be sent.

Default: Off

- **Suppression Duration for Same Person Best Shots (seconds)**

※ Displayed only when [Suppress Best Shots for the Same Person] is set to On

Configure the duration for suppressing best shots for the same person.

Range: 1 - 10

Default setting: 5 (seconds)

– **Number of Persons for Best Shot Suppression**

※ Displayed only when [Best Shot Suppression for the Same Person] is set to On

Configure the number of persons for whom best shot transmission is suppressed.

Range: 1 - 10

Default setting: 5 (persons)

– **Add detection frame information to video data**

Set whether to add detection frame information to the video data.

Default: On


Click Set to save your changes.



- If the upper or lower limit of the detection frame size is set to 0, it means that there is no limit on the detection frame size.

4.3.2 Settings related to ONVIF Metadata

Configure settings related to ONVIF Metadata. For information on sending ONVIF Metadata, refer to the external interface specifications.

Settings related to ONVIF® Metadata 	Add features for People picture search	<input checked="" type="radio"/> On	<input type="radio"/> Off
	Give the ClassCandidate to Analytics Stream *When set to On, Milestone XProtect® Metadata Search is available. Learn more about Metadata Search >>	<input checked="" type="radio"/> On	<input type="radio"/> Off
	Give the Image to Analytics Stream	<input type="radio"/> On	<input checked="" type="radio"/> Off



- Can only be set using the camera browser on V2.10 or later

– **Add features for People picture search**

Set whether to add features for searching people photos in multi-AI software.

Default: On

– **Give the ClassCandidate to Analytics Stream**

Set whether to add a ClassCandidate tag to the Analytics Stream.

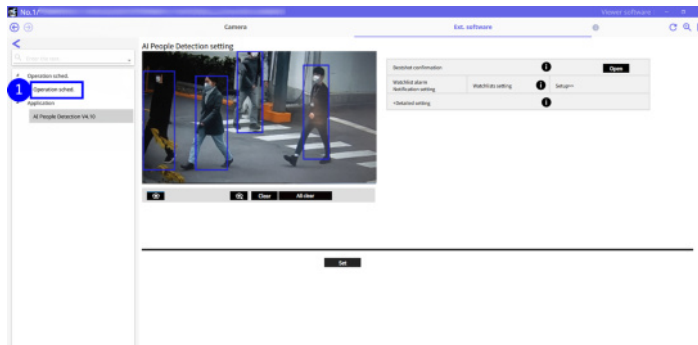
Default: On

– **Give the Image to Analytics Stream**

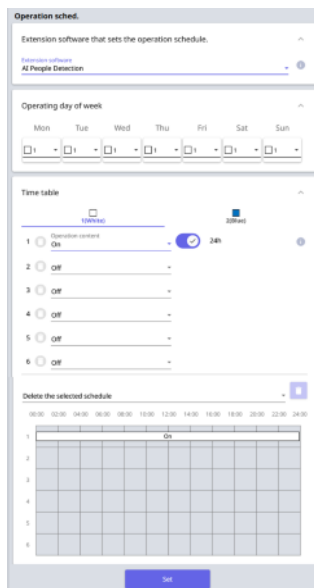
Set whether to add an Image tag to the Analytics Stream.

Default: Off

4.4 Operation sched



1. Click [Operation sched.] from the left menu of [AI People Detection setting].



- Extension software that sets the operation schedule

Select "AI People Detection".

- Operating day of week

Set the operation for each day of the week. Select "Timetable 1", "Timetable 2" or "Off".

If you select "Off", the system will not operate on that day.

Default: Monday to Sunday, select timetable 1

- Time table
 - Set the time and operation details for this product.
 - You can set up to six operation times for each of [Timetable 1] and [Timetable 2].
- Operation content
 - Select the operation of this product.
 - On: The AI People Detection application will run.
 - Off: The AI People Detection application will not run.
 - For items set to "On," set the time to operate. If you set it to "All day," it will operate all day.
 - Default:
 - [Timetable 1]
 - Operation content 1: On, All Day
 - Operation content 2-6: Off
 - [Timetable 2]
 - Operation content 1-6: Off
- Set
 - Click to save the schedule settings and enable the schedule.



- If the camera's operation schedule is set to Off, you will not be able to open the settings screen for this product.

5 Others

5.1 Specifications

5.1.1 PC environment required

For information about the PC environment, requirements, and supported browsers used for settings, refer to the camera's instruction manual.

5.1.2 Compatible cameras



Refer to the following for the combinations and restrictions of this product and camera.

→[Equipment compatibility](#) <C0103>

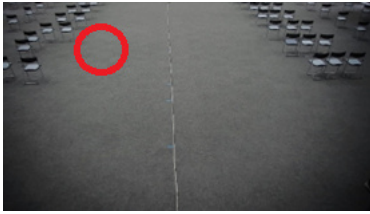
5.2 For trademarks and registered trademarks

- Internet Explorer and ActiveX are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
- Screen photographs are used according to the guidelines of Microsoft Corporation.
- ONVIF is a trademark of ONVIF Inc.

5.3 appendix

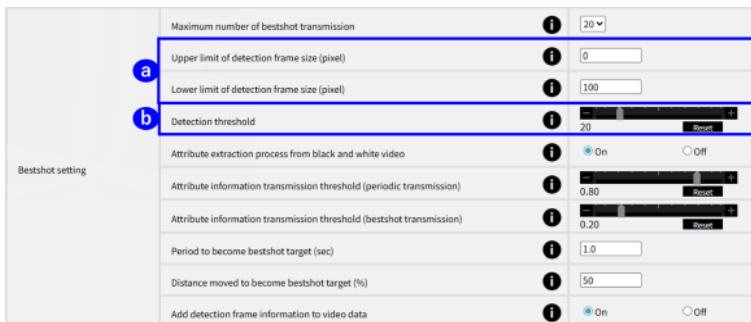
5.3.1 Note about false object detection

The best shot may be sent due to a false detection of floor patterns or object shapes.



countermeasure

1. If the object being detected as a false positive is in a location where people do not pass, you can reduce the false positives by masking that location.
2. If the object being falsely detected is clearly smaller (or larger) than a person, you can reduce false alarms by adjusting the (a) "Lower limit of detection frame size" (or "Upper limit of detection frame size") in the Best Shot settings.
3. You can reduce false alarms by increasing the "Detection Threshold" (b) in the Best Shot settings. However, this may make it harder to detect people.



5.3.2 Attribute Identification Notes

Attribute identification may not be accurate for people who are photographed from above, or who are not fully visible due to being at the edge of the screen.



countermeasure

By setting the above area as a mask area, it is possible to obtain an image that is more suitable for attribute identification.



5.4 Open Source Software

This product uses the following open source software. Please refer to "Open Source Software" for

the corresponding license statements.

Software name	License Name
libjpeg-turbo	The IJG (Independent JPEG Group) License, which is listed in README.ijg The Modified (3-clause) BSD License The zlib License
open_model_zoo	Apache License 2.0

See [Open Source Software] below for the corresponding license text.

Open Source Software

libjpeg-turbo Licenses

libjpeg-turbo is covered by three compatible BSD-style open source licenses:

- The IJG (Independent JPEG Group) License, which is listed in [README.ijg](#)
README.ijgThis license applies to the libjpeg API library and associated programs (any code inherited from libjpeg, and any modifications to that code.)
- The Modified (3-clause) BSD License, which is listed below
This license covers the TurboJPEG API library and associated programs, as well as the build system.
- The [zlib License](#)
zlib LicenseThis license is a subset of the other two, and it covers the libjpeg-turbo SIMD extensions.

Complying with the libjpeg-turbo Licenses

This section provides a roll-up of the libjpeg-turbo licensing terms, to the best of our understanding.

1.If you are distributing a modified version of the libjpeg-turbo source, then:

- .You cannot alter or remove any existing copyright or license notices from the source.

Origin

- Clause 1 of the IJG License•Clause 1 of the Modified BSD License
- Clauses 1 and 3 of the zlib License

- .You must add your own copyright notice to the header of each source file you modified, so

others can tell that you modified that file (if there is not an existing copyright header in that file, then you can simply add a notice stating that you modified the file.)

Origin

• Clause 1 of the IJG License • Clause 2 of the zlib License

iii. You must include the IJG README file, and you must not alter any of the copyright or license text in that file.

Origin

• Clause 1 of the IJG License

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i. Your product documentation must include a message stating:

This software is based in part on the work of the Independent JPEG Group.

Origin

• Clause 2 of the IJG license

ii. If your binary distribution includes or uses the TurboJPEG API, then your product documentation must include the text of the Modified BSD License (see below.)

Origin

• Clause 2 of the Modified BSD License

3. You cannot use the name of the IJG or The libjpeg-turbo Project or the contributors thereof in advertising, publicity, etc.

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