

Facial recognition server software using deep learning technology

Facial recognition server software matches the faces captured by the network camera against the faces of persons already registered in the database. In addition, using operations from a client terminal, it is possible to search for the face of the person subject to the notification, and check the image which captured that person.

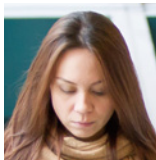
Key Features

High performance facial recognition

- High performance Deep Learning facial recognition function distinguishes face orientation, sunglasses, surgical mask, facial aging change



Horizontal range : $\pm 45^\circ$



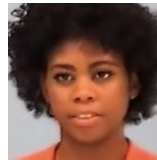
Vertical range : $\pm 30^\circ$



Sunglasses



Surgical mask



Facial aging change



	WV-ASF950
Range of angles*	Horizontal range : -45° to $+45^\circ$ Vertical range : -30° to $+30^\circ$
Minimum size of the face image*	30 pixel (Eye Distance : 15 pixel)

*There might be a change of specification.

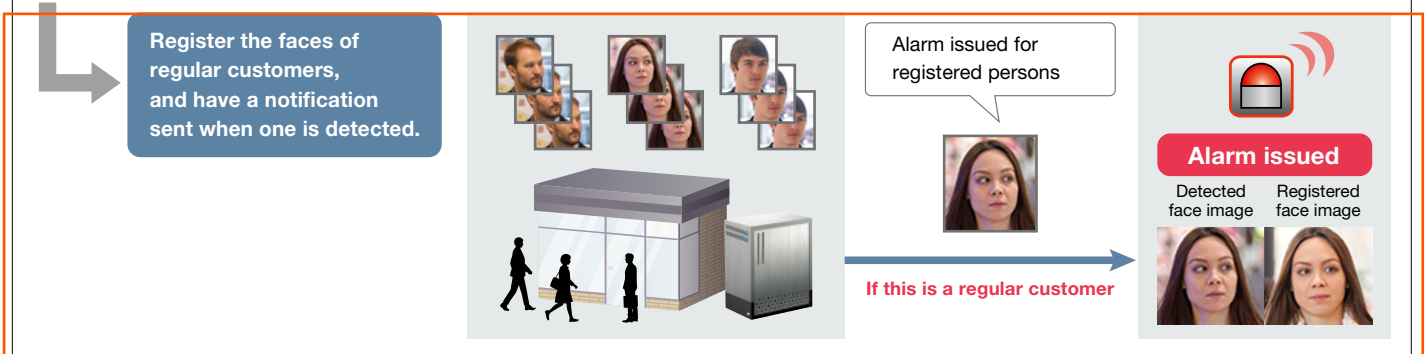
Facial recognition function

Registered face detection function

- Issue notification if there is a match with a registered person. Display history in list format.

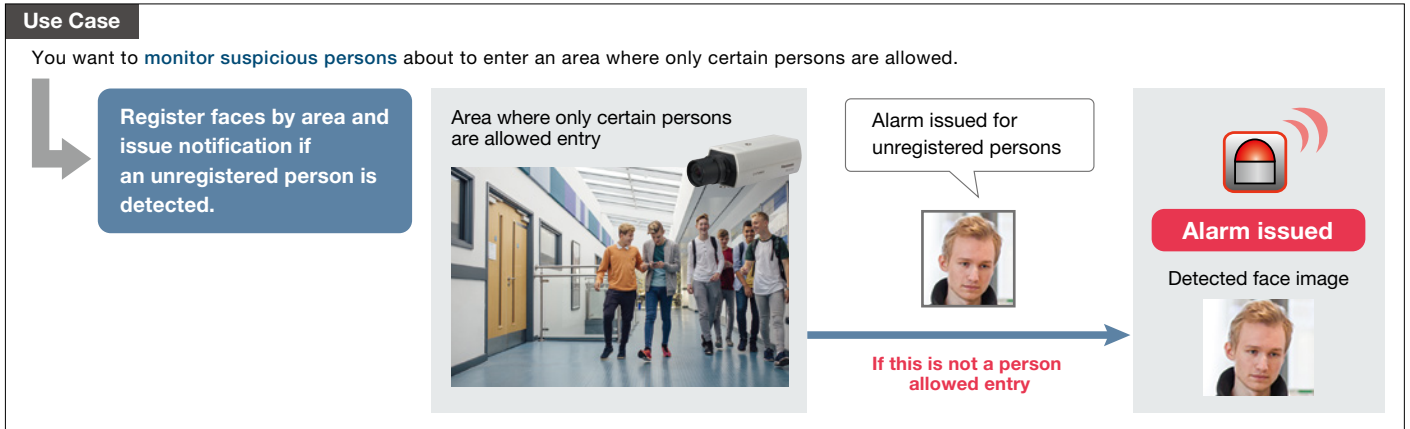
Use Case

You do not want to overlook the store arrival of a regular customer because you want to be ready to provide priority service.



NEW Unregistered face detection function (detection of suspicious persons)

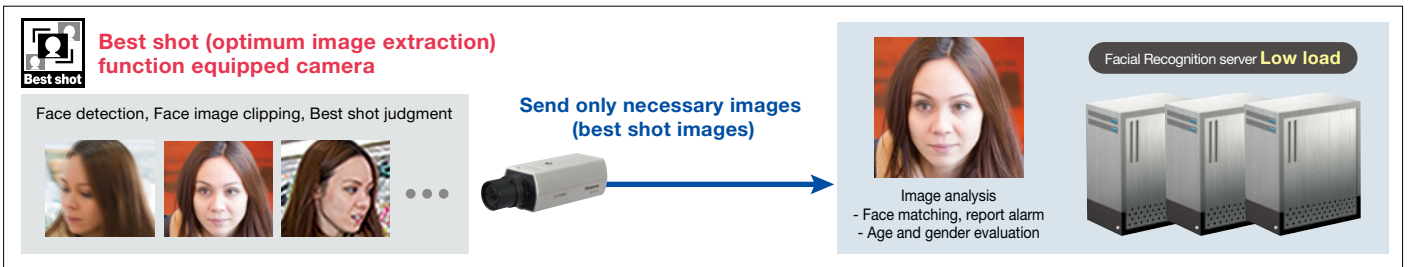
- Register faces by area and issue notification if an unregistered person is detected. Display history in list format.



- [Important] • When you install WV-ASF950 (Ver.2.0), please select "Registered face detection function" or "Unregistered face detection function." Only one of these functions can be used on a single server.
- When the "Unregistered face detection function" is used, the time that it takes to issue the alarm is several seconds longer than the conventional recognition function.

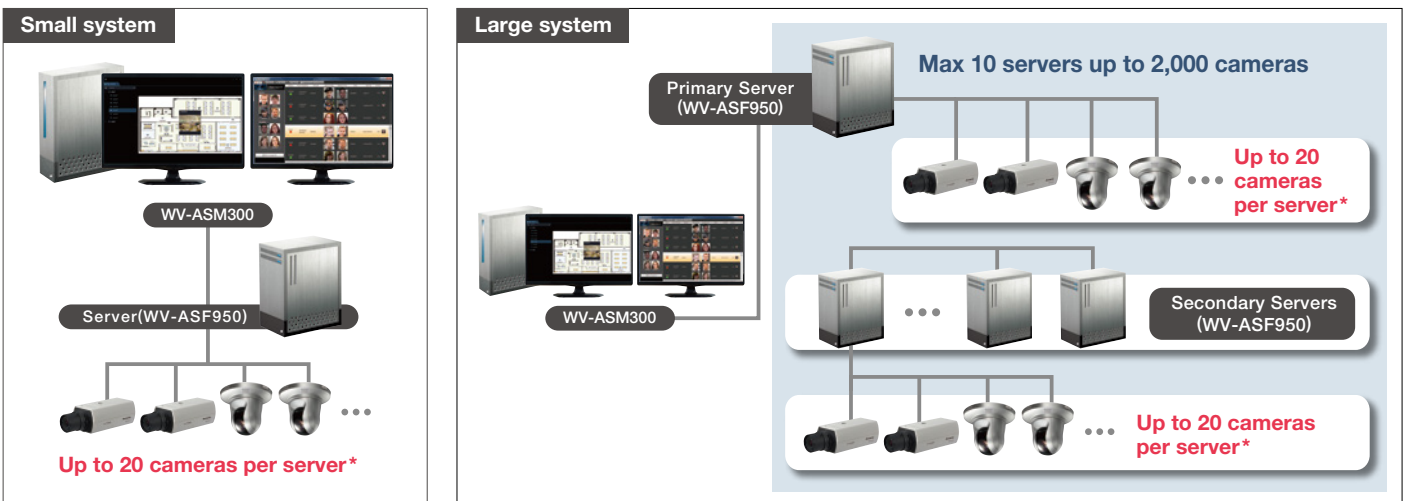
Cost Reduction

- Up to 20 cameras can be connected to one server. Reduce the system total cost such as server cost, network cost etc.
- *The number of cameras that can be connected is determined by the number of people passing and the retention period of the face image.



System expandability

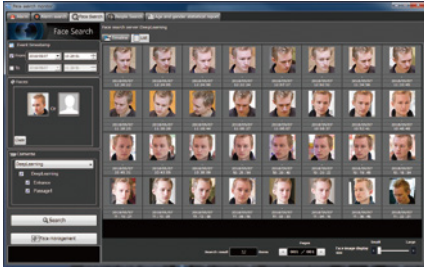
- Up to 30,000 faces can be registered and WV-ASF950 can be used in large facilities.



*The WV-ASF950 includes license for 4 network cameras. To connect more than 5 cameras to the WV-ASF950, purchase WV-ASFE901 or WV-ASFE904 sold separately. When unregistered face detection function is selected, up to 10 cameras.

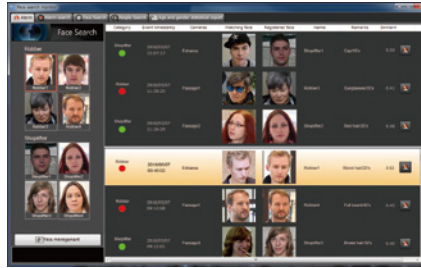
Face search

- Face images that camera detected are stored, and it can be searched later.
- By searching the face database, you can display the result of each cameras in chronological order and find movement locus of persons.
- Specify camera or date in detected face images and display the result in the list in similarity order.



Face Matching

- When it is matched with registered people, alarm of face matching is output in real-time, and display an alarm history in the list.
- Specified screen image can be played back on control monitor with double-clicking on an alarm history.



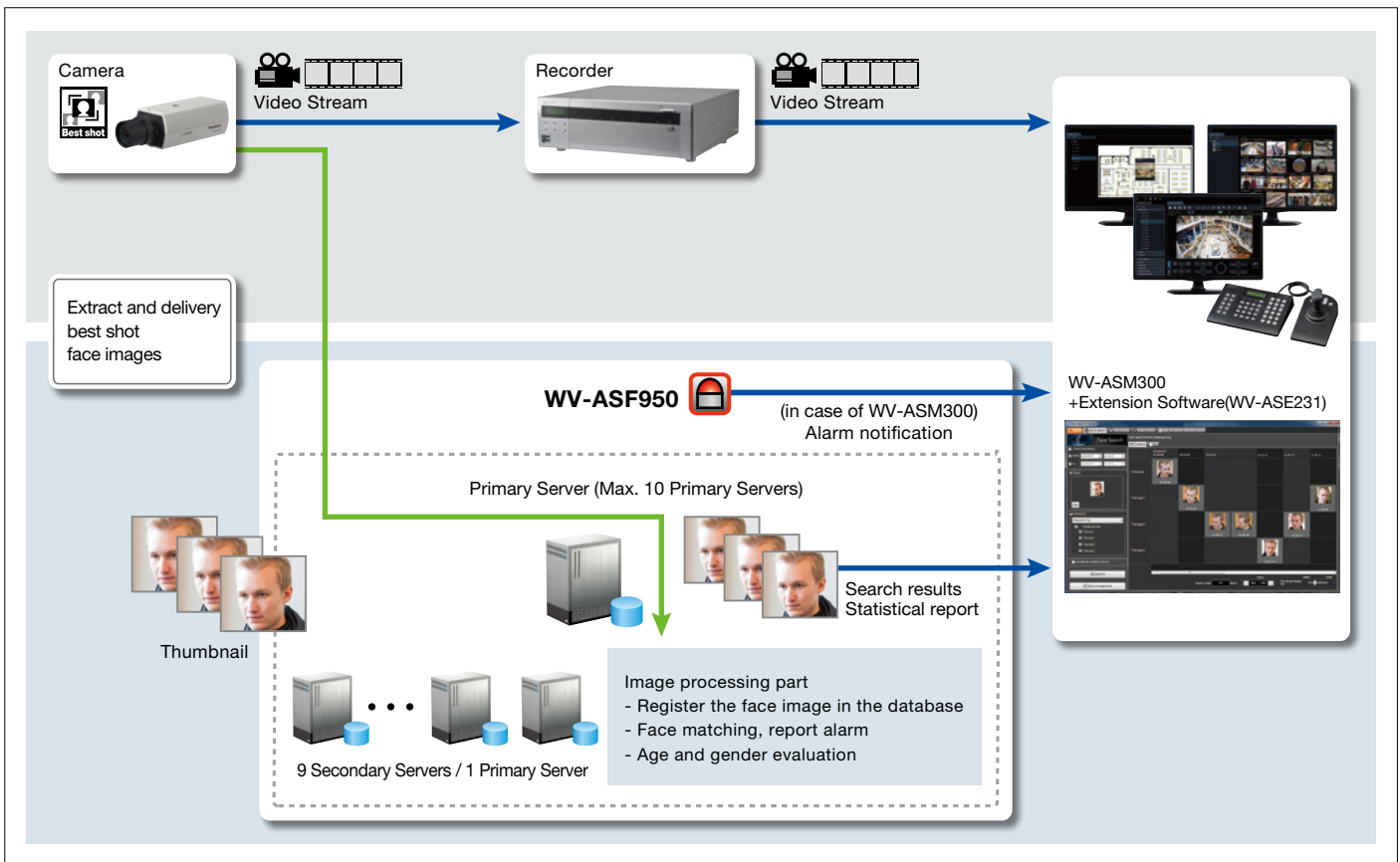
People counting, Age and Gender Statistics

- Count people of detected face and evaluate their age and gender
- Display the result on the screen with statistical graph
- The statistical data can be saved as a CSV file* for analytical use.

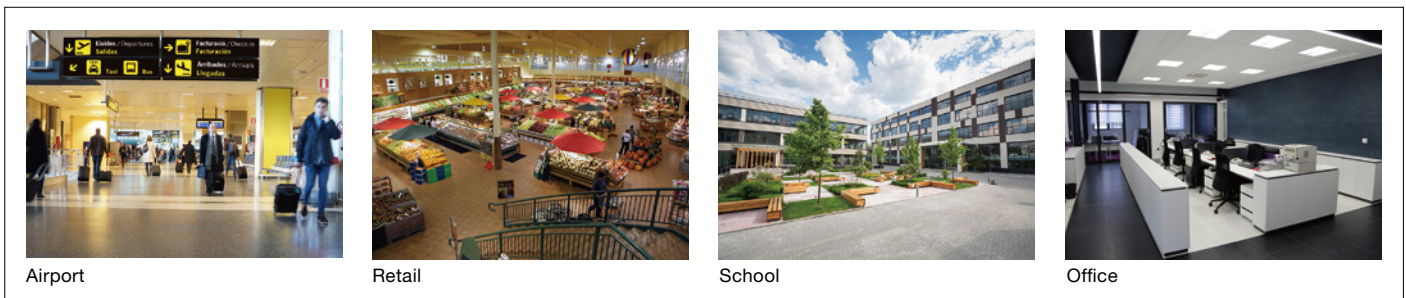
*CSV file: A file that can be edited using a spreadsheet software such as Microsoft® Office Excel®



Basic System Connection Example



Industry examples



Specifications

Basic Specifications

		Installation Type	
		Registered Face Detection	Unregistered Face Detection ^{*1}
Basic	Face matching speed	At 1 second in 30,000 registered faces ^{*2}	At 3 second in 30,000 registered faces ^{*2}
	Max. number of face in matching list	Up to 30,000 face ^{*3}	
	Face searching speed in database	3 seconds per 5 million faces ^{*4}	
	Max. number of face history	Up to 10 million items	
Face Conditions	Range of angles	Horizontal range : -45° to +45°, Vertical range : -30° to +30°	
	Minimum size of the face image	30 pixel (Eye Distance : 15 pixel)	
	Face with sunglass	Yes	
	Face with surgical mask	Yes	
Functions	Registered face matching	Yes	Yes ^{*1}
	Unregistered face matching	No	Yes
	Face search and associated video playback	Yes	
	People counting / Age and gender statistics	Yes	
system	Max. number of connected camera	10 cameras is suitable, up to 20 cameras per 1 face matching server. ^{*5}	Up to 10 cameras per 1 face matching server. ^{*5}
	Max. number of servers	100 servers (10 primary + 90 secondary)	
System Expansion/ Integration	Integration with CCTV system	i-Pro NVR+ASM300	
	SDK - API support	Yes	
	Notification	Rotation Warning Light / Mail Notification	
	Max. number of client PC that can be linked with the alarm	WV-ASM300 : 16	

*1 Depending on settings, Unregistered Face Detection and Registered Face Detection can be used simultaneously. *2 From receiving the face thumbnail to matching in face matching server.

*3 Two Additional Face Registration Kits WV-ASFE951 are necessary. *4 The best case when the time range is narrowed down and the number of search result is 100 faces. Depending on the search conditions, the search time may take several minutes. *5 Deploying plural face servers in a system is acceptable.

System requirements

Hardware

CPU	Intel® Xeon® or Core™ i7 series 3.40 GHz or faster (4-core 8-thread or better)	Graphic	NVIDIA® QUADRO® P5000
Memory	32 GB or more	Power supply	550 W or more
HDD	1 TB or more	OS	Microsoft® Windows® 10 Pro RS4 (64 bit), Microsoft® Windows Server® 2016 Standard Edition

[Important] If the system down of Windows occurred such by unexpected power outage, etc., database may be damaged and the functions such as face search and face verification may not work appropriately. It is strongly recommended to use UPS in order to avoid corruption of data.

Network Camera (face detection)

Network Camera	WV-S1132 / WV-S1131 / WV-S1112 / WV-S1111 / WV-S2531LTN ^{*7} / WV-S6130 / WV-SPN631 ^{*6} / WV-SPN611 ^{*6} / WV-SPN531A / WV-SPN311A / WV-SPN310A / WV-SP305 / WV-SFV631LT ^{*7} / WV-SC385 ^{*8}
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*6 The Optional IR-LED(WV-SPN6FRL1) can not be installed with any of the tested Lenses. *7 Although this is the outdoor model, it can be used as face matching camera for indoor only.

*8 After fixing the angle of view, if you control the camera with PTZ operation, the face matching function will not work properly. In this case, set the view of angle properly again by using the preset position function.

Tested Lenses

Maker	Model Name	Day/Night	Resolution	Focal Length (mm)	Camera (excluding Lens)				
					WV-S1131, WV-SPN531, WV-SPN631	WV-S1132, WV-S2531LTN	WV-S1111, WV-S1112, WV-SPN310	WV-S1112, WV-SPN311, WV-SPN611, WV-SP305	WV-SP306
FUJINON*	YV3.3x15SA-SA2	Day	3 MP	15 - 50	○			○	
	YV3.3x15SR4A-SA2	D/N	3 MP	15 - 50	○			○	
	DV10x8SR4A-SA1 ^{*9}	D/N	3 MP	8 - 80	○			○	
	YV10x5HR4A-SA2	D/N	1.3 MP	5 - 50	○ ^{*10}			○	
TAMRON*	M13VG550	Day	1.3 MP	5 - 50	○ ^{*10}			○	
	M13VG850IR	D/N	3 MP	8 - 50	○			○	

*9 Since this lens is C-mount type, the C/CS-mount lens adaptor is necessary.

*10 This lens has lack of clearness and vividness, as this lens cover only up to 1.3 MP resolution. However, it has enough potential for facial recognition.

* Panasonic do not guarantee the quality, performance, operation of third-party products.

Network Disk Recorder

Network Disk Recorder	WJ-NX400 Series, WJ-NX300 Series, WJ-NX200 Series, WJ-NV300 Series, WJ-NV200 Series, WJ-ND400 Series, WJ-ND300 Series
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Management Software

i-PRO Central Management software + Extension software	WV-ASM300 + WV-ASE231
The unified security platform from Genetec Inc.	Genetec Security Center / Security Desk V5.6 SR4, V5.7 SR1 + WV-ASE231
Video Insight VMS Software	Video Insight IP Server / VI MonitorPlus V7.2 + WV-ASE231

Products Lineup

Facial recognition server software

Product Name	Model No.
PC Software Package	WV-ASF950, WV-ASF950W
Additional Camera Kit	1ch WV-ASFE901, WV-ASFE901W
	4ch WV-ASFE904, WV-ASFE904W

Product Name	Model No.
Additional Face Registration Kit	WV-ASFE951, WV-ASFE951W
Extension Software for WV-ASM300, VI MonitorPlus, Genetec Security Desk	WV-ASE231
Upgrade Software	WV-ASF950UGW

*The performance of the face matching function varies depending on such conditions as the camera installation, camera settings, camera adjustment, surroundings and photographic subjects.

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Important

- Safety Precaution: Carefully read the operating instructions and installation manual before using this product.
- Panasonic cannot be responsible for the performance of the network and/or other manufacturers' products used on the network.

• All TV pictures are simulated.
• Specifications are subject to change without notice.

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