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Panasonic to Launch Face Recognition Server Software Using Deep Learning Technology

The Face Recognition Server Software WV-ASF950 and the Face Registration Expansion Kit WV-ASFE951W will be launched in July outside Japan and in August 2018 in Japan

Face recognition server software
Product number : WV-ASF950
(February 2018, Panasonic)

Osaka, Japan - Panasonic Corporation today announced that it will release face recognition server software using deep learning technology in July 2018 outside Japan and in August 2018 in Japan.

Featuring a core engine that boasts the world's highest face recognition performance[*1], this high-precision face recognition software can identify faces that are difficult to recognize with conventional technologies, including faces at an angle of up to 45 degrees to the left or right or 30 degrees up or down, and those partially hidden by sunglasses.

In Addition, the new software features the "iA (intelligent Auto) mode"[*2] that automatically adjusts settings for the camera to shoot optimal images best suited for face recognition. When it is used with Panasonic's i-PRO EXTREME series network cameras installed with the "Best Shot License Key" that comes bundled with the software, only the "Best Shots" will be sent to the server for face recognition. The combination of Panasonic core devices and the face recognition software maximizes the performance of the software's core engine to achieve high-precision recognition. The company plans to add a function to recognize partially covered faces with a surgical mask, which is difficult with conventional systems, by the end of this year.

Furthermore, using this software with cameras equipped with the iA function enables image analysis to be performed on the camera instead of the server to send only the best images to the server. This will result in reducing server and network loads, which leads to overall system cost reductions. In the case of 10 or more network cameras are connected to the system, the costs can be reduced by about 40 to 50% compared to conventional systems that do not use the Best Shot function.

Panasonic will continue to improve its security-related products and provide various solutions to meet increasingly diversifying and evolving customer needs, such as face recognition solutions for integrated management with a monitoring system. By providing these solutions, the company is aiming to become a "total integrator" capable of contributing to customers' frontline operations.

Panasonic's Deep Learning Face Recognition Software has the following features:

1. High precision:
   - The world's highest face recognition engine as evaluated by NIST (IJB-A face challenge)
   - iA function and Best Shot images maximize face recognition engine performance and provide high recognition precision
2. System cost reduction: Send only the "Best Shot" images to reduce server load and network load
3. System expandability:
   - Register up to 30,000 faces (Available as an option)
   - Integrated management with i-PRO monitoring system: Enables integrated management of a face recognition system and monitoring system with the same GUI

Notes:

*1 In April 2017, the product achieved the highest level of face recognition performance in the world in a comparison test (IJB-A Face Verification Challenge Performance Report/IJB -A Face Identification Challenge Performance Report) of NIST (National Institute of Standards and Technology) of the United States, one of the most authoritative institutes in the world.

*2 A function that utilizes the technology of Panasonic's "LUMIX" consumer digital cameras to capture optimal images for face recognition by automatically detecting the moving objects, movement speed, faces, and light intensity (whether the scene is day or night) found in video that is usually hard to see due to subject movement and backlight, in order to enable real-time optimization of settings

[Development Background]

With the rapid popularization of IoT and AI, initiatives for connecting various types of information to make life more convenient are taking place in every industrial sector. A new technology called "deep learning" is being utilized in order to achieve this. Panasonic has adopted this deep learning technology in its face recognition products for the security industry. This has led to the successful development and commercialization of the face recognition technology that overcomes the difficulties of conventional technologies, such as recognizing faces when they are tilted, changed by aging, or partially hidden with sunglasses. Panasonic will offer this product as a personal recognition solution for video security in various situations, such as the monitoring of public facilities and entry management.

[Product Features]

1. High precision:
Top-tier face recognition engine evaluated by NIST (IJB-A face challenge)

- The deep learning technology used in the new software was jointly developed with the National University of Singapore and improves face recognition performance by up to 500%[*3] compared to conventional systems.

*3 Rejection rate reduced to 20% when the wrong person acceptance rate is set to 0.01 with the IJB-A face image dataset.

- A unique algorithm that combines deep learning, a machine learning method, with a similarity calculation method that suppresses errors, enables recognition in situations that were difficult with conventional face recognition technology, such as when the face is angled (up to 45 degrees to the left or right or 30 degrees up or down), partially hidden with sunglasses or a surgical mask[*4], or changed by aging.

Angled face   Aging   Sunglasses   Surgical mask[*4]

*4 Scheduled for launch by the end of 2018

iA function and Best Shot images maximize face recognition engine performance and provide high recognition precision

- The iA function enables cameras to automatically detect the scene and automatically optimize the settings accordingly to improve the detectability of the video images. The camera automatically detects the moving objects, movement speed, faces, and light intensity (day/night/headlights) found in video that are usually hard to see due to subject movement and backlight, and optimizes the settings in real-time and capture more optimal video of the subject.

- The Best Shot License Key included with this software can be installed on Panasonic i-PRO EXTREME series network cameras (sold separately) to automatically select the images suitable for face recognition from the multiple face images captured when a person passes in front of the camera, and send only those selected images to the server. This enables high-quality images suitable for face recognition to be sent without putting a load on the server.

Example of iA effect

2. System cost reduction
Send only the Best Shot images to reduce server load and network load

- With conventional face recognition systems, all captured images are sent to the server, and the server performs face detection and face recognition, which concentrates the load of data processing on the server. Systems also tend to be large-scale because of the large bandwidth required to send all the images and the high capacity hard drive space required to save those images.

- Using Panasonic's system that combines this product with cameras that include the iA function allows faces to be detected by the camera and only the Best Shot images that contain faces to be sent to the server, which dramatically decreases network load and eliminates the need for large bandwidth. Performing facial recognition on the server using the Best Shot images reduces server load and hard drive capacity requirements as well as permitting up to 20[*5] network cameras to be connected to a single server.

- With this Panasonic system, it is no longer necessary to send the data-intensive high resolution images to a server, unlike conventional systems. This delivers high-precision face recognition while dramatically decreasing network traffic, transmission costs, and network construction costs.

- When using Panasonic's system with 10 or more network cameras connected, costs can be reduced by about 40 to 50% compared to conventional systems that do not use the Best Shot function.

*5 The number of cameras that can be connected depends on the number of people passing by the camera and the retention period for face images.

3. System Expandability:
Register up to 30,000 faces (option sold separately)

Simple batch registration of a maximum of 10,000 faces is possible with the standard Face Recognition Server Software (WV-ASF950). The optional Face Registration Expansion Kit (WV-ASFE951W) enables registration of up to 30,000 faces at large-scale facilities.

Integrated management with i-PRO monitoring system

Face detection, face recognition, and tracking with recorded video can be performed in the same GUI by performing integrated management with the WV-ASM300 or WV-ASE231W client software for Panasonic i-PRO monitoring systems. This eliminates the need for the dedicated operation and management required for conventional face recognition systems and enables work to be centralized.

<Specifications>

-Face Recognition Server Software

Product Number	Overview
WV-ASF950 WV-ASF950W	Number of faces: Up to 10,000 faces can be registered. This number can be expanded to a maximum of 30,000 faces by using the Face Registration Expansion Kit. Number of cameras: Up to four cameras can be connected. This number can be expanded to a maximum of 20 cameras by using the Existing Camera Expansion Kit WV-ASFE901 (x 1) and WV-ASFE904 (x 4).

-Face Registration Expansion Kit

Product Number	Overview
WV-ASFE951W	Expands the number of faces that can be registered from the standard number of 10,000 to 20,000 (with one license) or 30,000 (with two licenses).

About Panasonic

Panasonic Corporation is a worldwide leader in the development of diverse electronics technologies and solutions for customers in the consumer electronics, housing, automotive, and B2B businesses. Celebrating its 100th anniversary in 2018, the company has expanded globally and now operates 495 subsidiaries and 91 associated companies worldwide, recording consolidated net sales of 7.343 trillion yen for the year ended March 31, 2017. Committed to pursuing new value through innovation across divisional lines, the company uses its technologies to create a better life and a better world for its customers. To learn more about Panasonic: http://www.panasonic.com/global.

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