



Installation and Configuration Guide for Dual-Lens Face Recognition Camera

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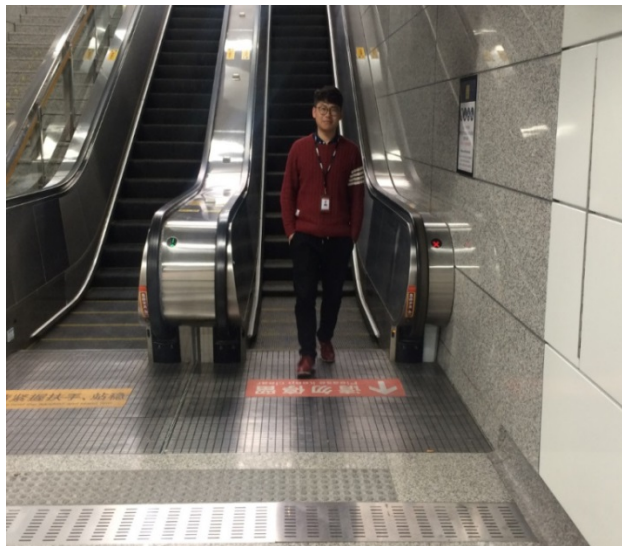
Chapter 1 Installation Specifications

1.1 Installation

The accuracy rate of face recognition can be superb, depending on the installation location. The ambient light should not be too bright or too dark. The following steps will guarantee better results:

- 1) The camera should be installed at entrances/exits to typical passageways, so as to ensure that the people that are walking by are facing the desired direction, and their faces can be captured as they enter/leave the passageway.
- 2) Select lighting conditions that provide adequate illumination. Light compensation is necessary to ensure that facial features are visible under conditions with insufficient light or backlight.

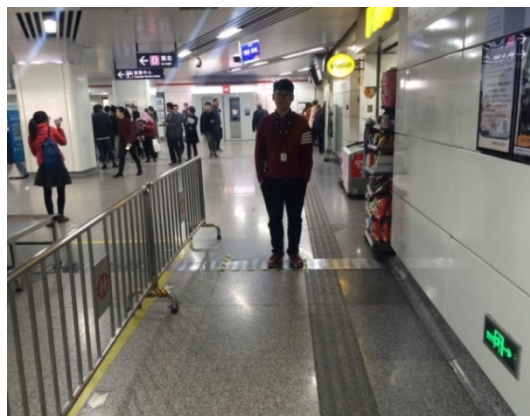
Suitable scenario:



Unsuitable scenario:

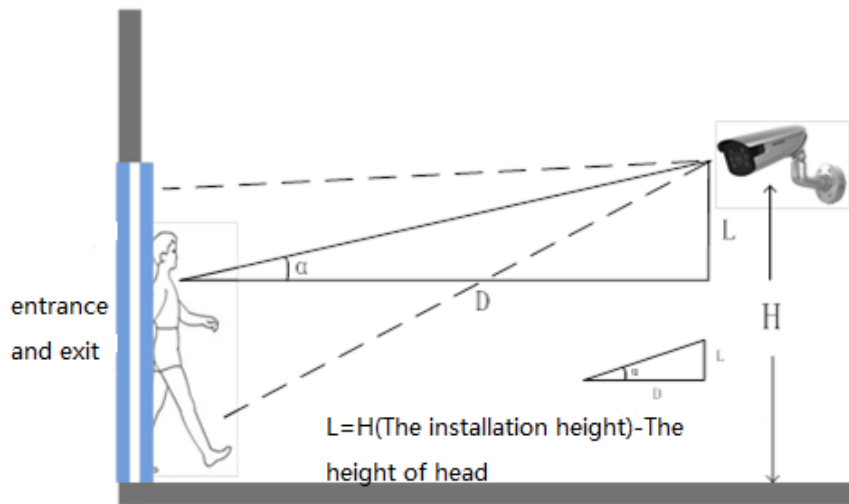


Backlight



Lack of light

1.2 Camera Installation Requirements

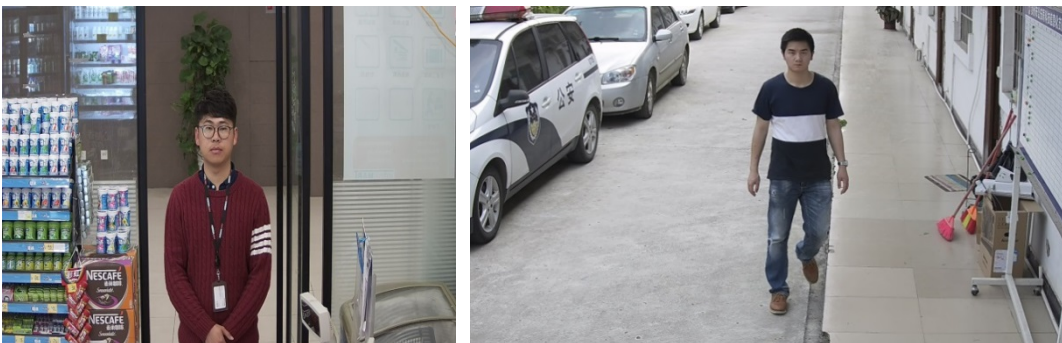


Installation diagram

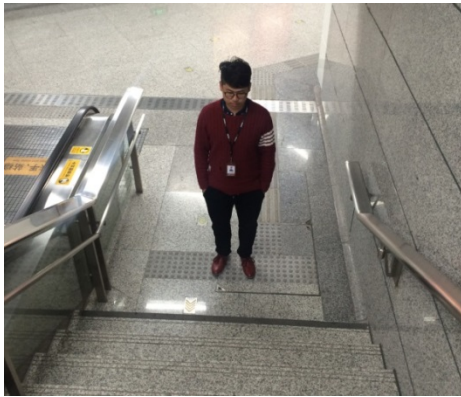
For optimal face capture, the camera installation position should be selected as follows:

- 1) The camera should be installed in front of the desired passageway. The horizontal angle of deflection should be less than 25° .
- 2) The camera should be installed at an elevated angle, which prevents partially obscured faces from being undetected when people walk through a passageway behind one another. The vertical elevation angle should meet the following requirement: $\alpha = 15 \pm 5^\circ$.
- 3) The covered PD (Pupil Distance) pixels need to be larger than 40 pixels in order to distinguish the face details from the captured image. The practical face detection width should be less than or equal to 3 meters, when combined with a 2 MP camera.
- 4) Make sure that there is no obstruction between the camera lens and the passageway.

Suitable scenario:



Unsuitable scenarios:



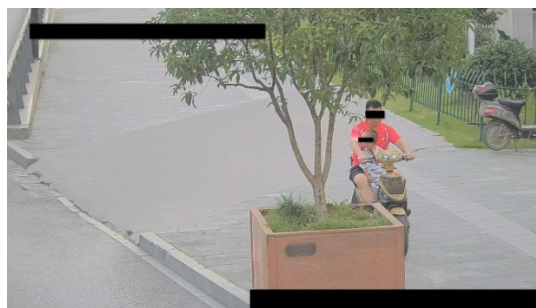
Dip Angle too large



Elevated capture



Scenario too wide



Inclined installation with obstacle



Scenario is too large, resulting in a low face recognition rate

1.3 Camera Lens Selection

- 1) Cameras, focal lengths, and monitoring widths are key points that affect distance and installation location. They can be converted amongst each other, as follows:
- 2) Focal length: $f = 1.8 \times D$

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- 3) The height of the camera: $H = \tan(\alpha^\circ) \times D + 1.5$
- 4) D = monitoring distance
- 5) The camera should not be more than 1.5 m above the typical subject's head height.
- 6) α = elevation angle
- 7) An elevation angle of 10° is recommended, i.e. $\tan(10^\circ) \approx 0.18$, $\tan(15^\circ) \approx 0.27$, $\tan(20^\circ) \approx 0.36$

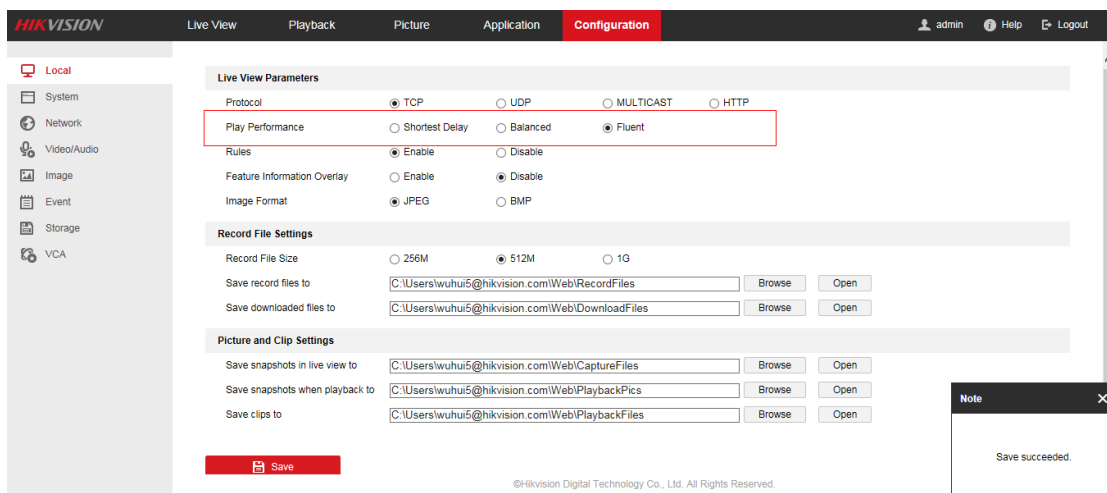
1.4 Installation Position and Lens Query Table

Camera Model	Monitoring Width W	Lens Focal Length	Monitoring Distance	Installation Height of Camera	Elevation angle α°
200W	3.0m	4mm	2.2m	1.9m-2.3m	$15^\circ \pm 5^\circ$
200W	3.0m	8mm	4.4m	2.3m-3.1m	$15^\circ \pm 5^\circ$
200W	3.0m	16mm	8.9m	3.1m-4.7m	$15^\circ \pm 5^\circ$

Chapter 2 Camera Configuration

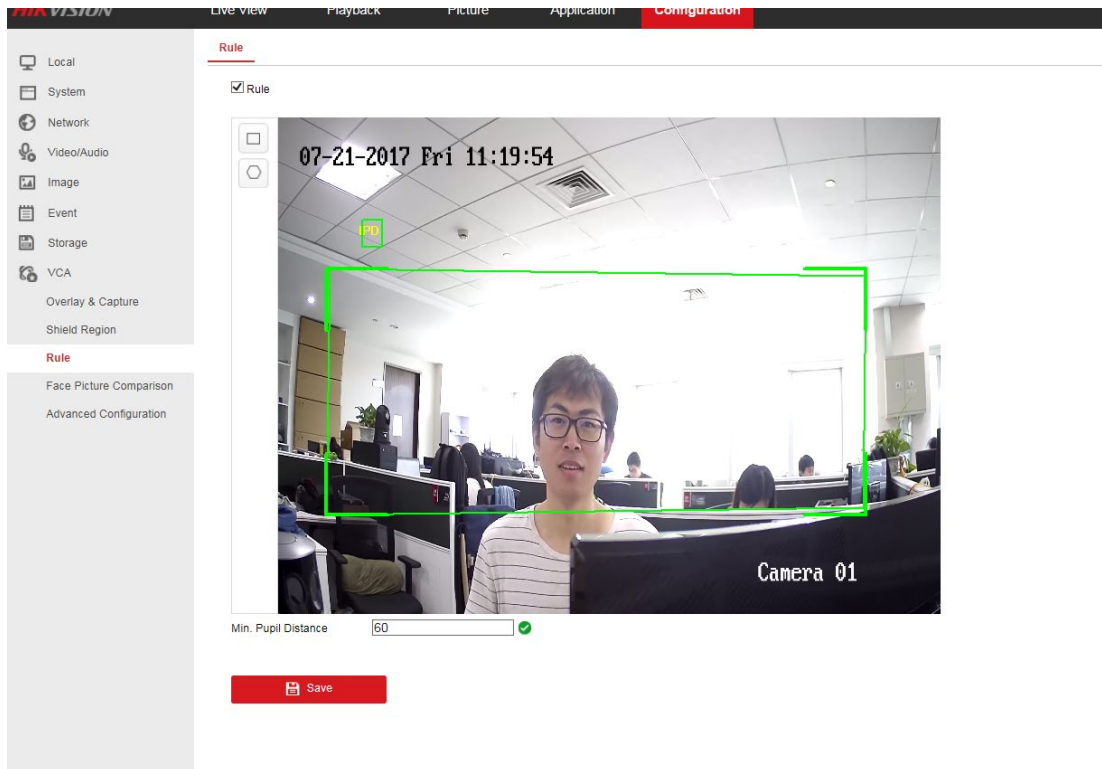
2.1 Configuration in Internet Explorer

- 1) Enter **Configuration** and click on **Local**. Set **Play Performance** to fluent. Enable **Rules**. Click **Save** when finished with configuration, as shown below:



- 2) Proceed as follows: **Configuration -> VCA -> Rule**. Click **Rule**. Configure the **Minimum Pupil Distance** and **Detection Area**. Click **Save** when finished with the configuration.
 - a) **Minimum Pupil Distance:** Minimum size filter box, which is used to control the size of the captured face. A maximum size box will be generated by default. A rectangular box is generated as a function of the distance between the eyes and mouth. The Minimum Pupil Distance should be set up by drawing the box instead of entering the number directly. A Minimum Pupil Distance is required for face pictures to be captured successfully. Different image resolutions require different box sizes. With 1080p resolution as an example, the **Minimum Pupil Distance** should not be less than 40. A value of 60 is recommended.
 - b) **Rules:** Draw a rectangle or polygonal (up to 10 sides) face detection area. The minimum value should be 28 x 28 pixels. The maximum size covers the entire screen. The detection area should be drawn as half of the screen area size, with no more than two-thirds of the picture.

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3) **Advanced Configuration:** Advanced Configuration parameters are generally set to default. To perform manual comparison, or to compare captured images with those stored in the “Face Recognition NVR”, change “Capture Times” to 5, which increases the number of uploaded face pictures. Click “Save” once finished.

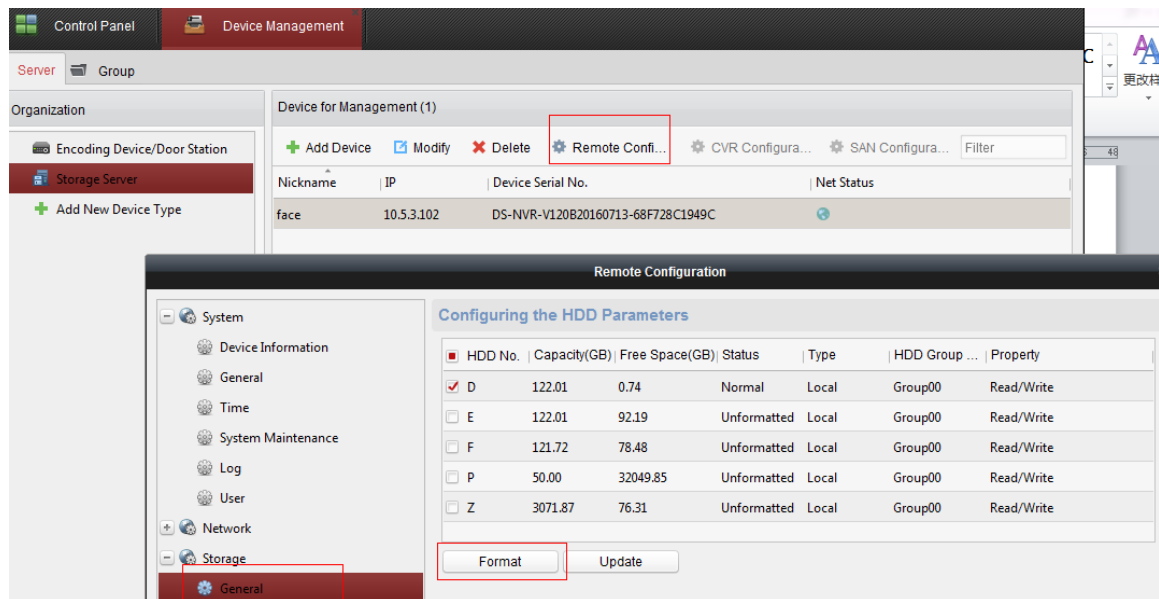
- **Generation Speed** controls the target generation speed in the detection region. The higher the value, the faster the target will be generated.
- **Capture Time** is used to set up the number of capture times in the detection area from when the face enters to when it leaves the area.
- **Sensitivity** is used to control face detection sensitivity. The higher the sensitivity, the easier it is to detect a face.
- **Capture Interval** captures face images every few frames during the process from entering to leaving the detection area. The quality of the captured image is highest among these few frames.
- **Capture Sensitivity** is used to set the score threshold of a captured picture. The face image can be captured only when the score is greater than or equal to the threshold.

2.2 Configuration via iVMS-4200

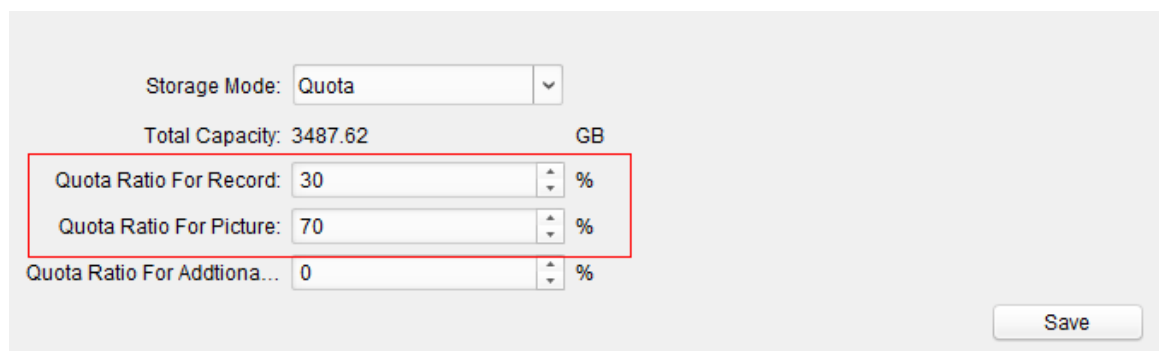
- 1) A storage server must be installed if the camera does not support SD cards.
- 2) Configure the storage server. Proceed as follows: **Remote Configuration -> Storage -> General**.

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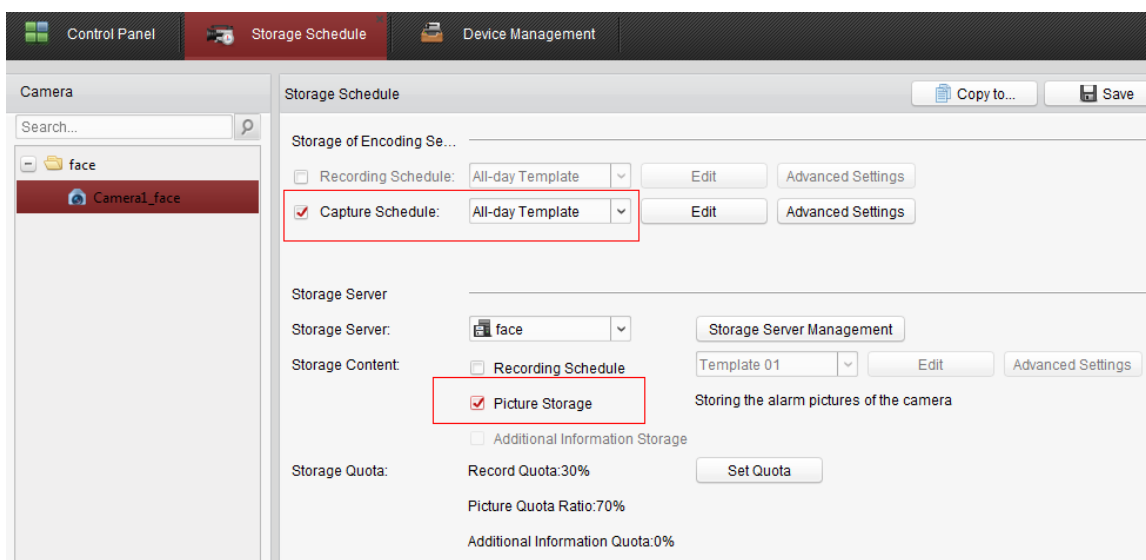
a) Format the hard drive.



b) Configure the Quota Ratio for record and picture.

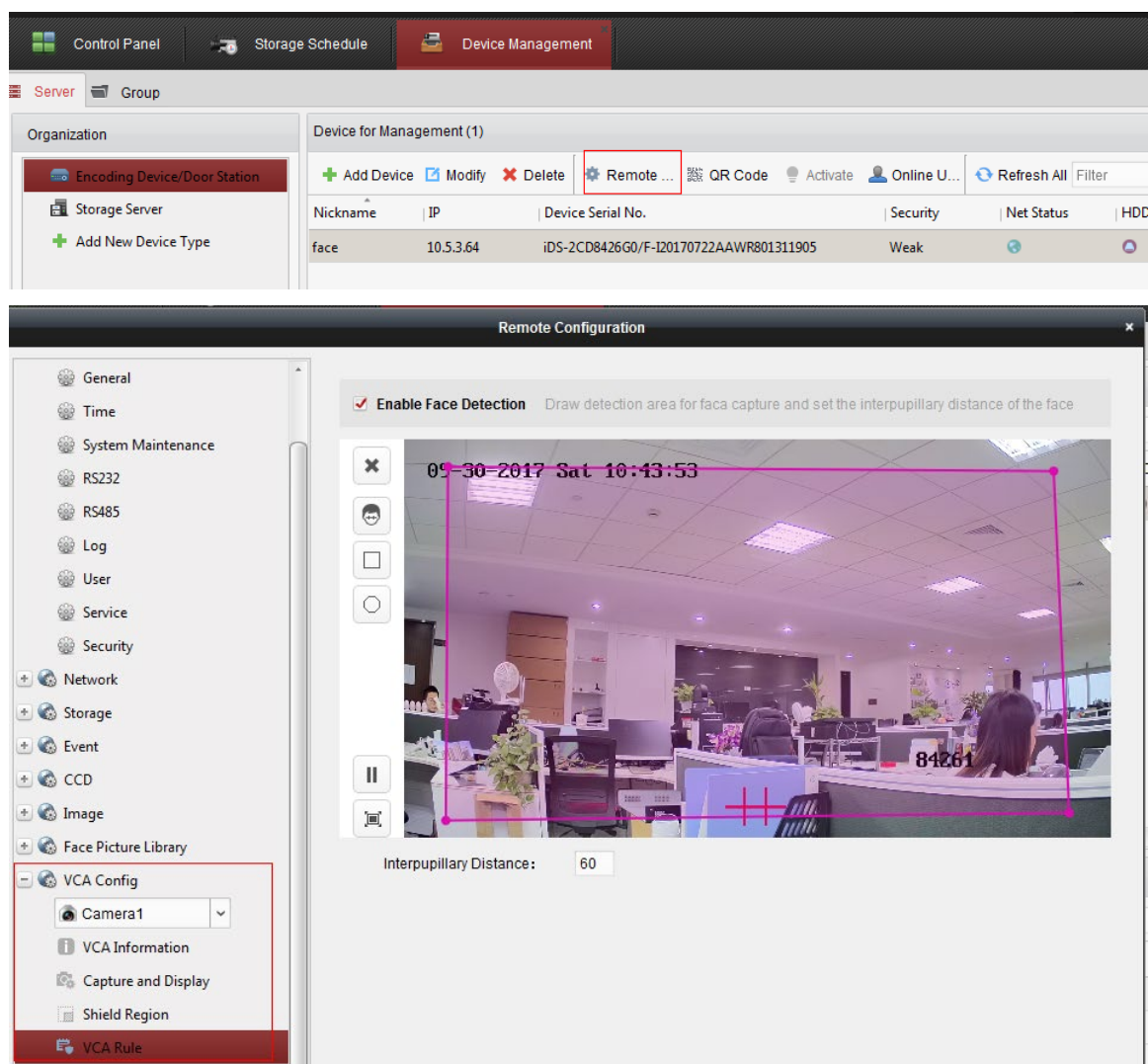


3) Enter the **Control Panel** and click on **Storage Schedule**. Configure the **Capture Schedule** and check **Picture Storage**.



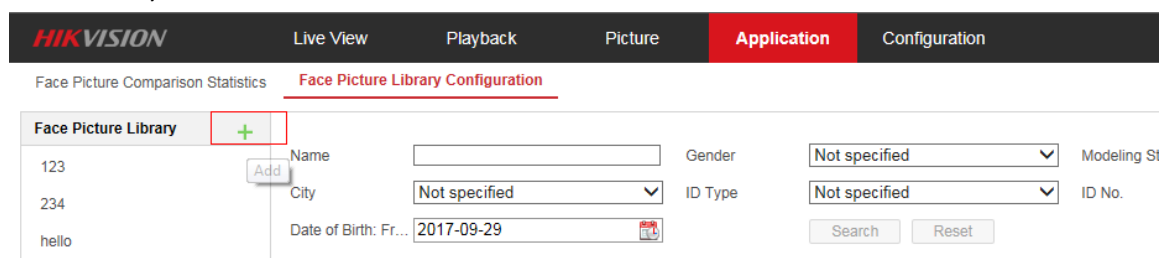
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- 4) Enter **Device Management** and click on **Remote Configuration**. Face detection function can be configured by expanding the **VCA Config** menu. Web configuration proceeds in the same way.



2.3 Configure Face Picture Library via Internet Explorer

- 1) Enter **Application** and proceed to **Face Picture Library Configuration**. Click “+” to create face library.
- NOTES: Only 3 face libraries can be created.



- 2) After clicking add, configure the **Face Picture Library Name** and **Threshold**.

NOTES: The threshold value is used to define the comparison similarity. When the similarity is equal to,

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or higher than the threshold, the camera will push the compared alarm picture to the NVR or IVMS-4200.

For example, if the threshold is set to 70, the comparison alarm picture will only be uploaded if the similarity percentage is 70% or higher. The suggested threshold is 60, and it is necessary to reboot the device after the threshold is modified.

Add

Face Picture Library Name

Test

✓

Threshold

60

✓

Remarks

⌵

OK

Cancel

3) Import the face picture.

Click **Add** to add pictures one at a time.

Import

Add

Modify

Delete

Batch Modeling

Modeling

ID Type	ID No.	Modeling Status
Unknown		Succeed

Click **Import** to batch import images.

Date of Birth: Fr...

1970-01-01

Import

Add

Modify

Delete

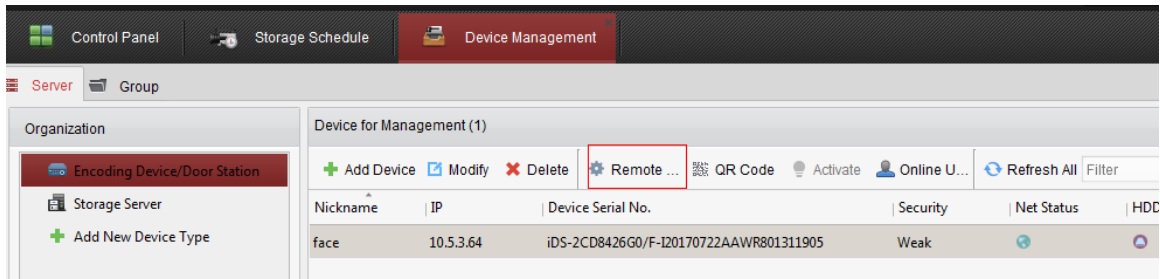
Batch Modeling

Modeling

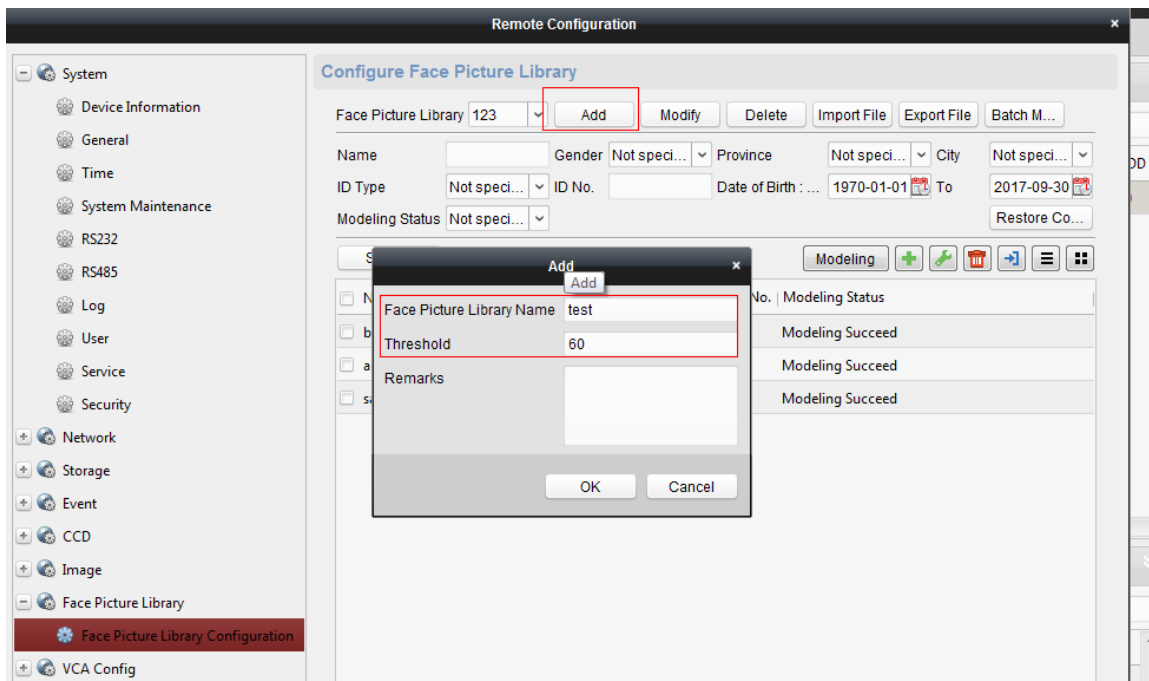
ID Type	ID No.	Modeling Status
Unknown		Succeed

2.4 Configure Face Picture Library via IVMS-4200

- 1) Proceed as follows: **Device Management -> Remote Configuration -> Face Picture Library -> Face Picture Library Configuration.**



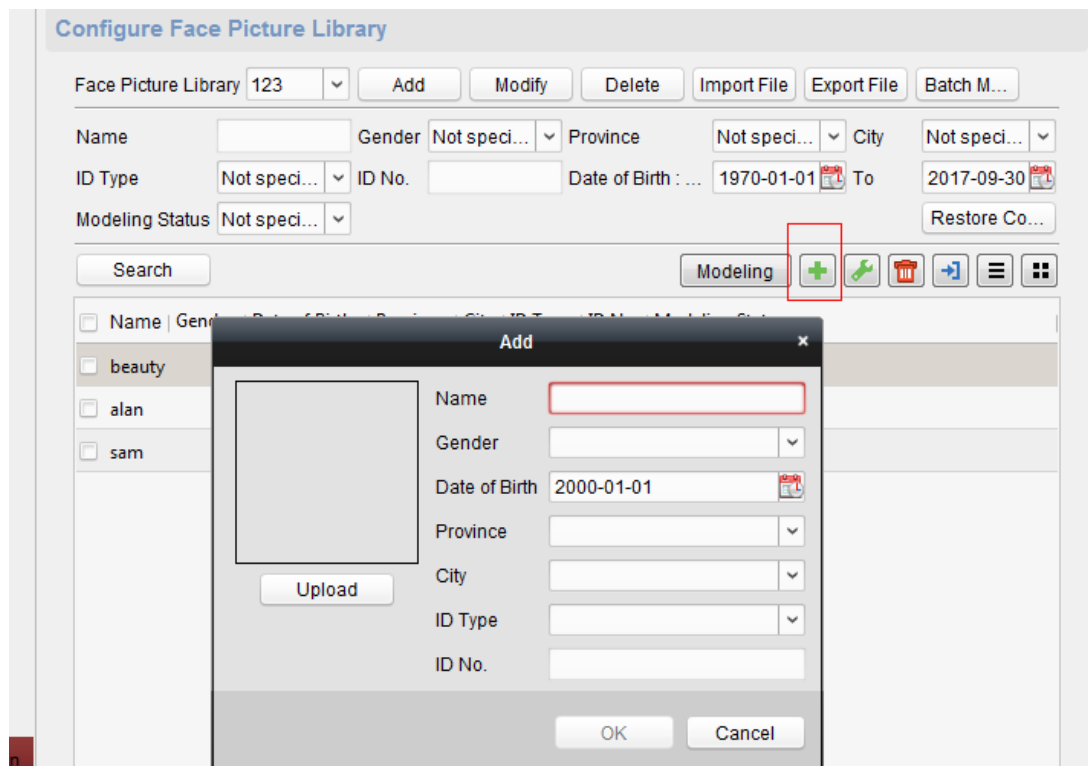
- 2) Add a new Face Picture Library.



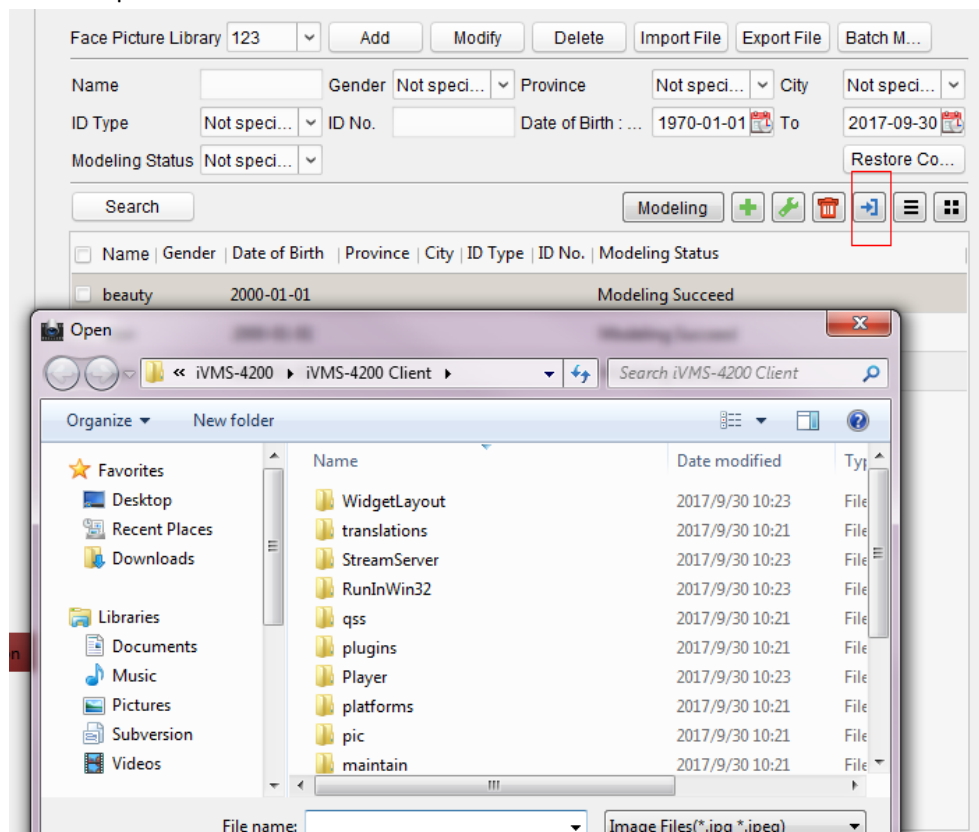
- 3) Add or import the picture to the face to the picture library.

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Add one image at a time:

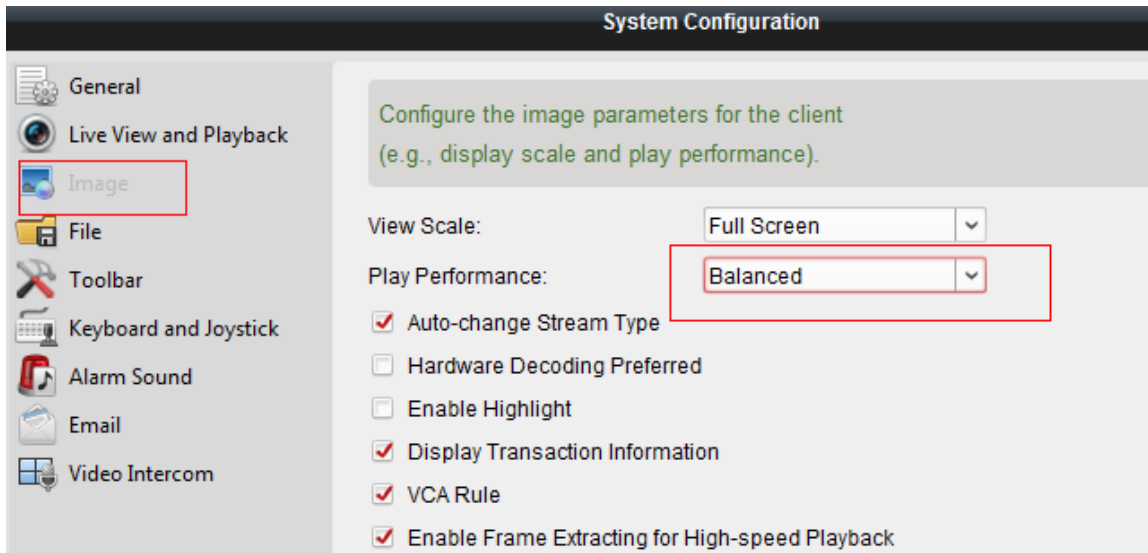


Batch Import:

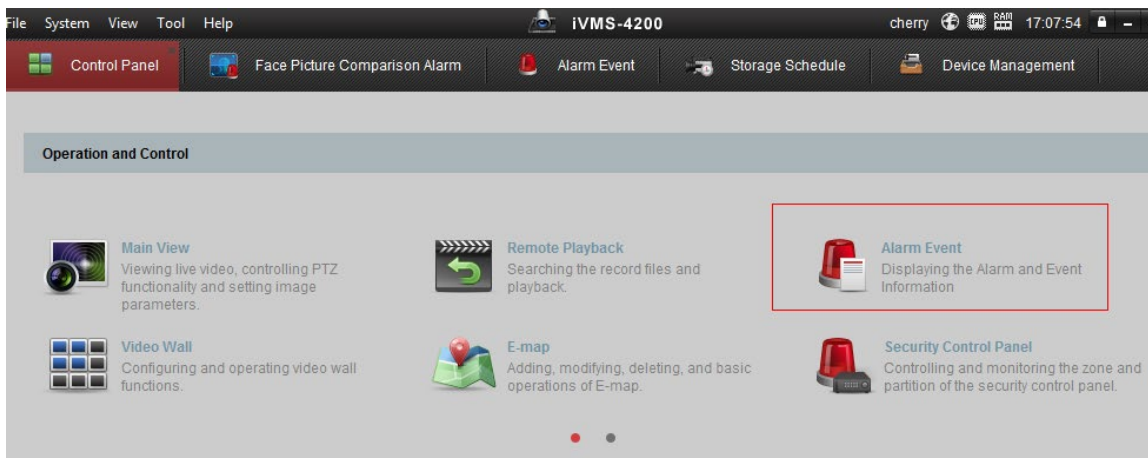


2.5 Results

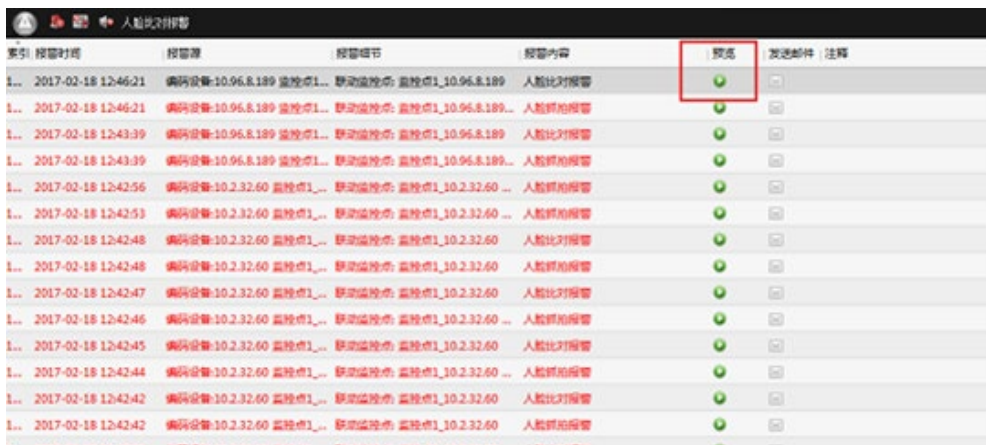
- 1) In IVMS-4200, proceed as follows: **Tool -> System Configuration -> Image**. Set **Play Performance** to **Balanced**.



- 2) Enter the **Alarm Event**. Click the “” button to check face comparison results.



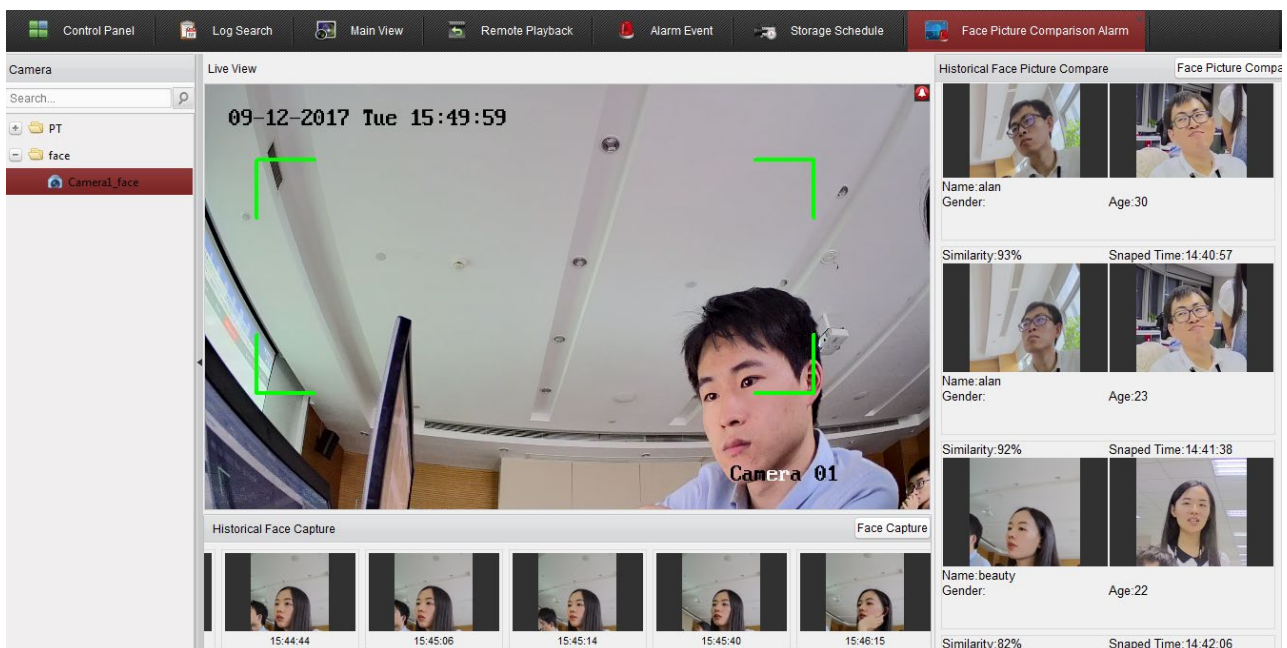
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索引	报警时间	报警源	报警细节	报警内容	状态	发送邮件	注释
1...	2017-02-18 12:46:21	摄像头-10.96.8.189	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:46:21	摄像头-10.96.8.189	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:43:39	摄像头-10.96.8.189	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:43:39	摄像头-10.96.8.189	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:56	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:53	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:48	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:48	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:47	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:46	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:45	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:44	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:42	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		
1...	2017-02-18 12:42:42	摄像头-10.2.32.60	摄像头1...	人脸比对报警	成功		

Face comparison results are shown below. They show Age and Similarity information in iVMS-4200.

NOTES: In order to be displayed, Name and Gender information need to be edited when they are being added or imported to the face picture library.



09-12-2017 Tue 15:49:59

Camera 01

Historical Face Capture

Face Capture

Historical Face Picture Compare

Face Picture Compare

Name: alan
Gender: Age: 30

Similarity: 93% Snaped Time: 14:40:57

Name: alan
Gender: Age: 23

Similarity: 92% Snaped Time: 14:41:38

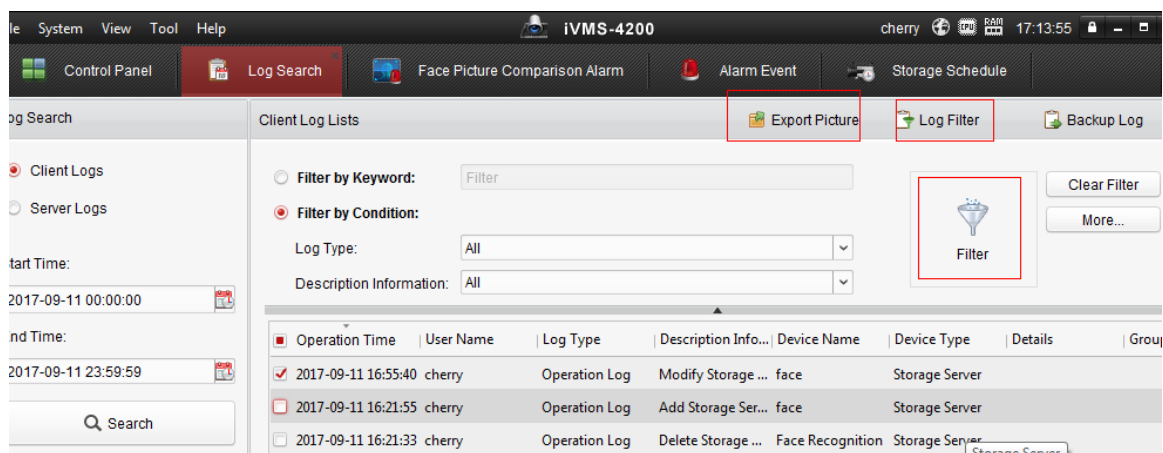
Name: beauty
Gender: Age: 22

Similarity: 82% Snaped Time: 14:42:06

3) Captured face pictures can be exported in iVMS-4200 or in the web client.

a) In iVMS-4200, click **Control Panel** and proceed to **Log Search**.

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- 4) In the Web client, click on **Application** and proceed to **Face Picture Comparison Statistics**. Input the Start and End time, and click search.

