

**Installation and Configuration Guide for Dual-lens
Face Recognition Camera**

Contents

Installation and Configuration Guide for Dual-lens Face Recognition Camera.....	1
Chapter1. Installation specification	3
1.1 Installation.....	3
1.2 The Installation Requirement of Camera	4
1.3 The Selection of Camera Lens.....	6
1.4 Installation Position and Lens Query Table	6
Chapter2 Camera Configuration.....	7
2.1 Configure the parameter via IE browser	7
2.2 Configure the parameter via IVMS-4200	8
2.3 Configure Face Picture Library via IE browser	10
2.4 Configure Face Picture Library via IVMS-4200.....	11
2.5 Result Demonstration	14

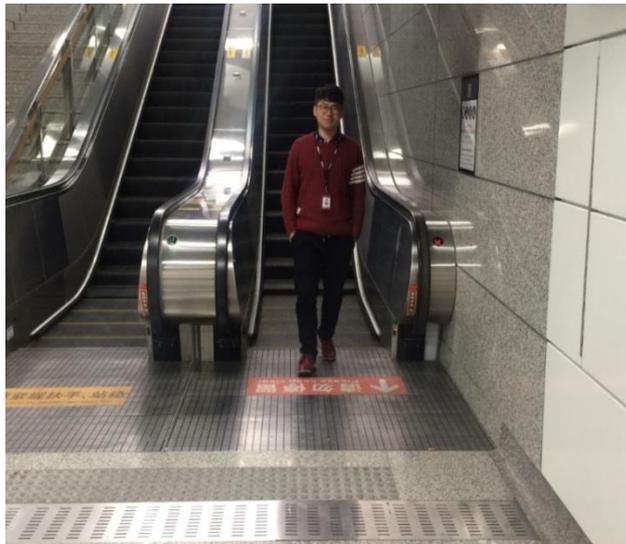
Chapter1. Installation specification

1.1 Installation

The accuracy rate of face recognition is great involved with installation location, ambient light (such as too dark, too bright) and so on. In order to ensure the better effect, it raises some installation suggestions as follows:

- 1) Installation position should be the standard passageways or the Entrances/ Exits, which insures the direction of traffic is particular and capture the Enter/Leave personnel' faces in the direction.
- 2) Choose the stable lighting condition with adequate illumination. Light compensation is necessary to ensure the facial features are visible under the condition of insufficient light or backlight.

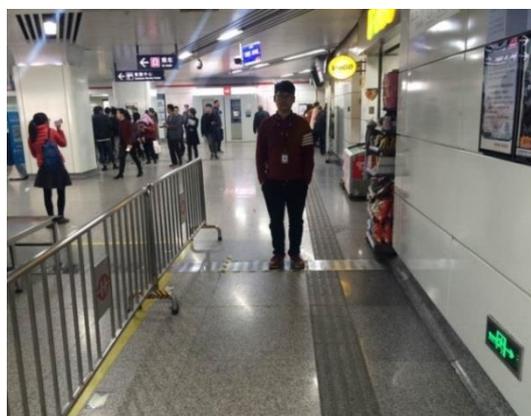
Example of standard scenario:



Example of unsuitable scenario:

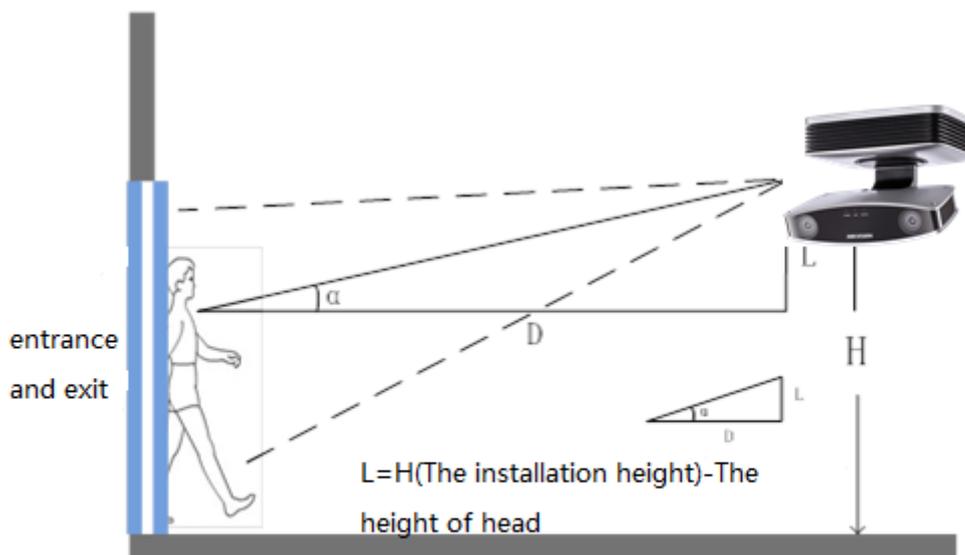


Backlight



Lack of light

1.2 The Installation Requirement of Camera



The installation diagram

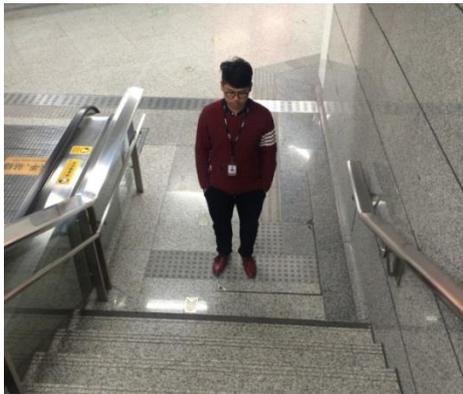
The installation position selection specification of face capture camera is as follows:

- 1) The camera should be installed in the front of passageway and capture the positive face. The horizontal angle of deflection had better be less than 25° .
- 2) The installation of camera needs an elevation angle, which avoids the situation that the rear face is obscured when the tandem persons go through the passageway. The vertically elevation angle should meet the below requirement: $\alpha = 15 \pm 5^\circ$.
- 3) It requires that the covered PD (Pupil Distance) pixels needs to be larger than 40 pixels to distinguish the face details from the captured image. The practical width of face detection should be less than or equal to 3 meters with 2MP camera.
- 4) Make sure that there is no shelter between the camera lens and the passageway.

Example of standard scenario:



Example of unsuitable scenario:



Dip Angle is too large



Elevation Capture



The scenario is too wide



Incline installation, with shelter



The scenario is too large and the face recognition rate is low

1.3 The Selection of Camera Lens

- 1) Different cameras, lens focal lengths and monitoring widths are key points for the different monitoring distance and installation. The conversion relation between them is as follows:
- 2) The selection of lens focal length: $f = 2.1D$ 8426 Face Recognition camera
 The selection of lens focal length: $f = 2.9D$ 2MP Bullet Face capture camera (1)
- 3) The height of camera: $H = \tan(\alpha^\circ) \times D + 1.5$ (2)
- 4) D : The monitoring distance
- 5) The height below the head sets as average value 1.5 m
- 6) α is the elevation angle
- 7) Elevation angle is recommended as 10° , $\tan(10^\circ) \approx 0.18$, $\tan(15^\circ) \approx 0.27$, $\tan(20^\circ) \approx 0.36$

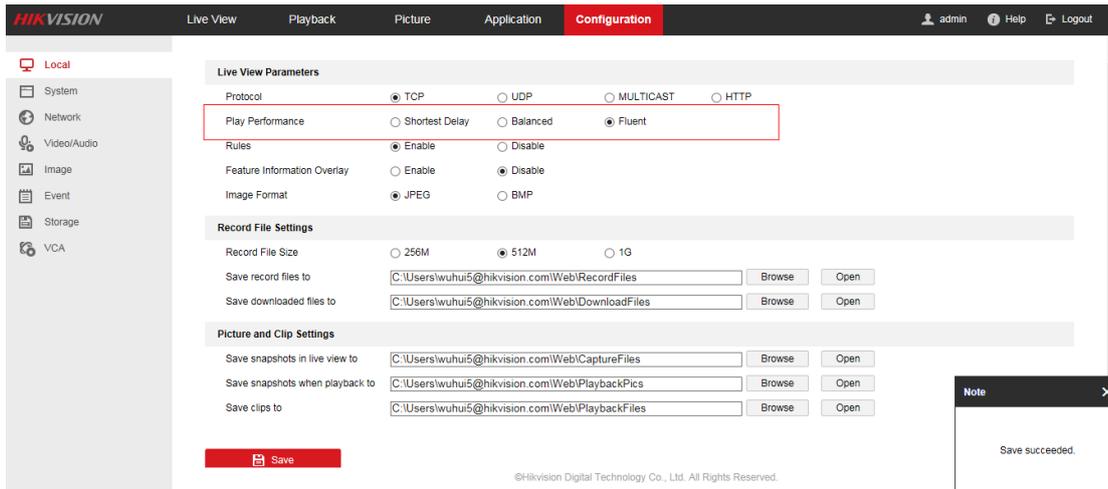
1.4 Installation Position and Lens Query Table

Camera Model	Monitoring Width W	Lens Focal Length	Monitoring Distance	Installation Height of Camera	Elevation angle α°
2MP 8426	2.5m	4mm	1.9m	1.8m	10°
2MP 8426	2.5m	6mm	2.8m	2.0m	10°
2MP 8426	2.5m	8mm	3.8m	2.2m	10°
2MP 8426	2.5m	12mm	5.7m	2.6m	10°
2MP 8426	2.5m	16mm	7.6m	2.9m	10°

Chapter2 Camera Configuration

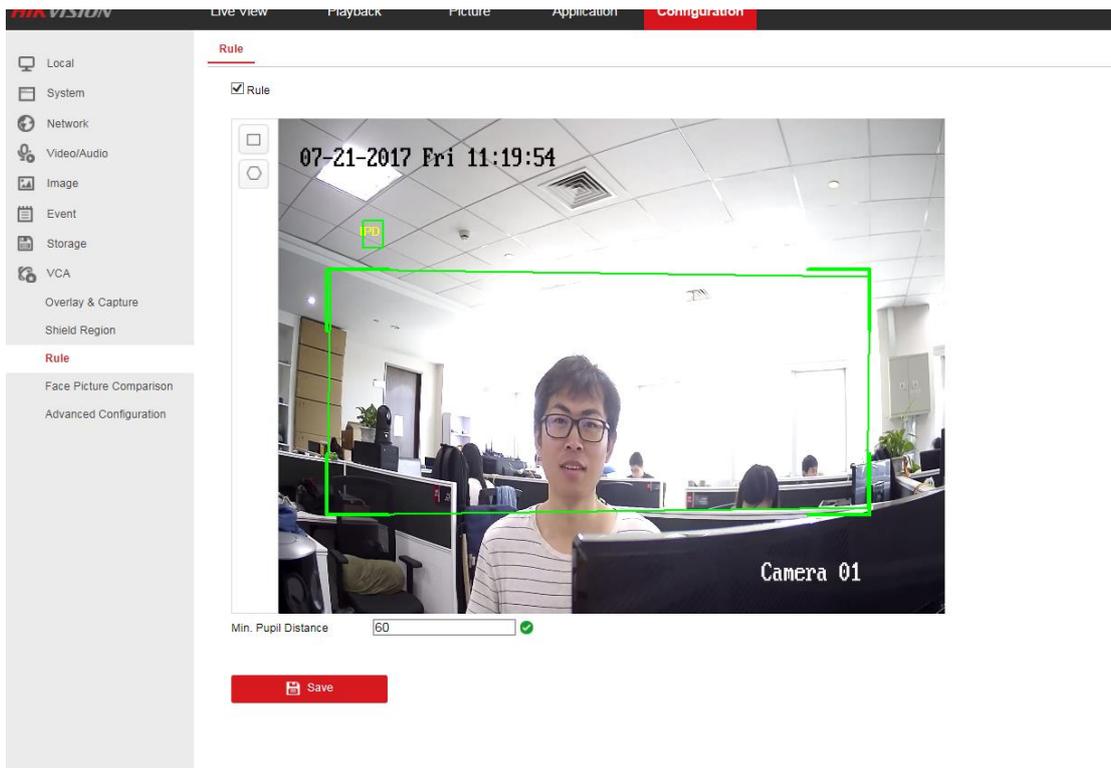
2.1 Configure the parameter via IE browser

Step 1: Enter [configuration]-[local], set the [play performance] as fluent; Enable [Rules]. Then Click “Save” when finishing the configuration, as shown in the below picture:



Step 2: Enter [configuration]-[VCA]-[Rule] interface, check the “Rule”. Then configure the “Min. Pupil Distance” and “Detection area”. Click “Save” when finishing the configuration.

- a) **【Min Pupil Distance】** : Minimum size filter box, which is used to control the size of the captured face. The maximum size box will be generated automatically by default, which the rectangular box is generated according to the distance between two eyes and mouth. Min Pupil Distance should be set up by drawing the box instead of entering the number directly. Moreover it is necessary to set up it, or it cannot capture face picture successfully. Different image resolutions require different box sizes. With 1080P resolution as an example, the size value of “Min Pupil Distance” shouldn’t be less than 40, and 60 is recommended.
- b) **【Rules】** : Draw a rectangle or polygonal (up to 10 sides) face detection area. The minimum value is 28*28 pixels and the maximum size is to cover the full screen. Detection area is generally recommended to be drawn as the half of the screen area size, no more than two-thirds of the picture.



Step 3: **【Advanced Configuration】** : The parameters of Advanced Configuration are generally set as default without modification. If want to realize self-comparison or comparison with “Face Recognition NVR”, “Capture Times” is suggested to modified to 5 times, which increases the number of uploading face pictures. Click “Save” when finishing the configuration.

【Generation Speed】 It is used to control the speed of target generation in the detection region, the higher the value, the faster the target to generate

【Capture Times】 It is used to set up the number of capture times in the detection area during the process from entering to leaving of face..

【Sensitivity】It is used to control the face detection sensitivity. The higher the sensitivity, the easier it is to detect the face.

【Capture Interval】 It will capture the face image 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.

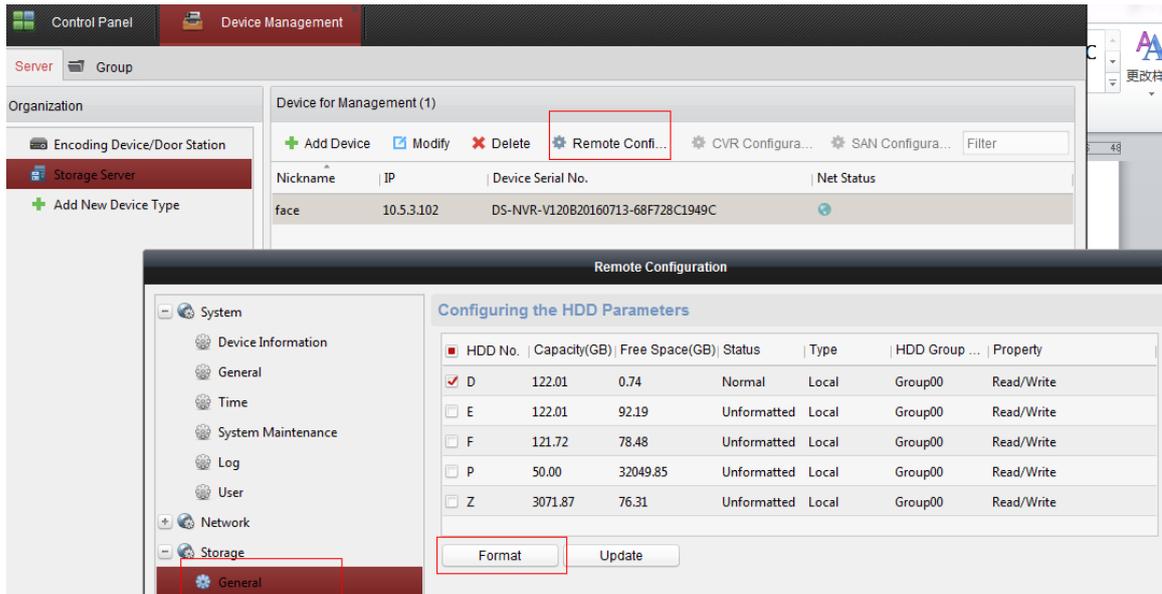
【Capture Sensitivity】 It is used to set the score threshold of captured picture. The face image can be captured only the score of face is greater than or equal to the threshold.

2.2 Configure the parameter via IVMS-4200

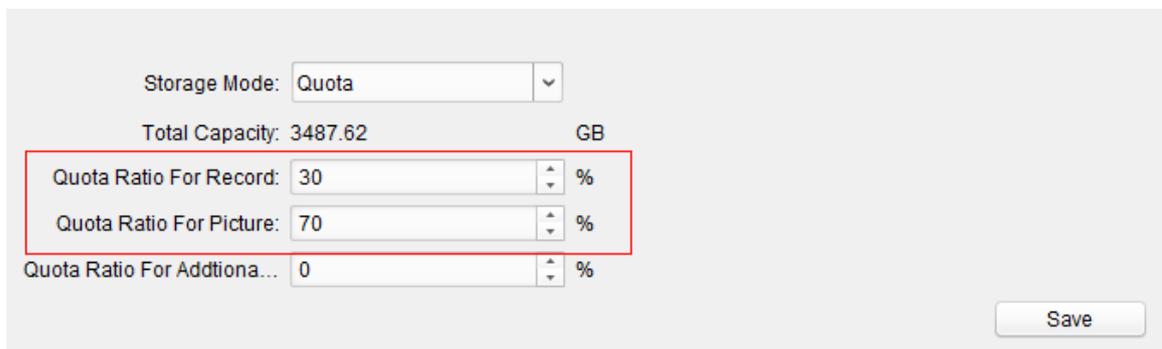
Step 1: It is necessary to install Storage Server if the camera doesn't install SD card.

Step 2: Configure the Storage Server. Enter [Remote Configuration]-[Storage]-[General].

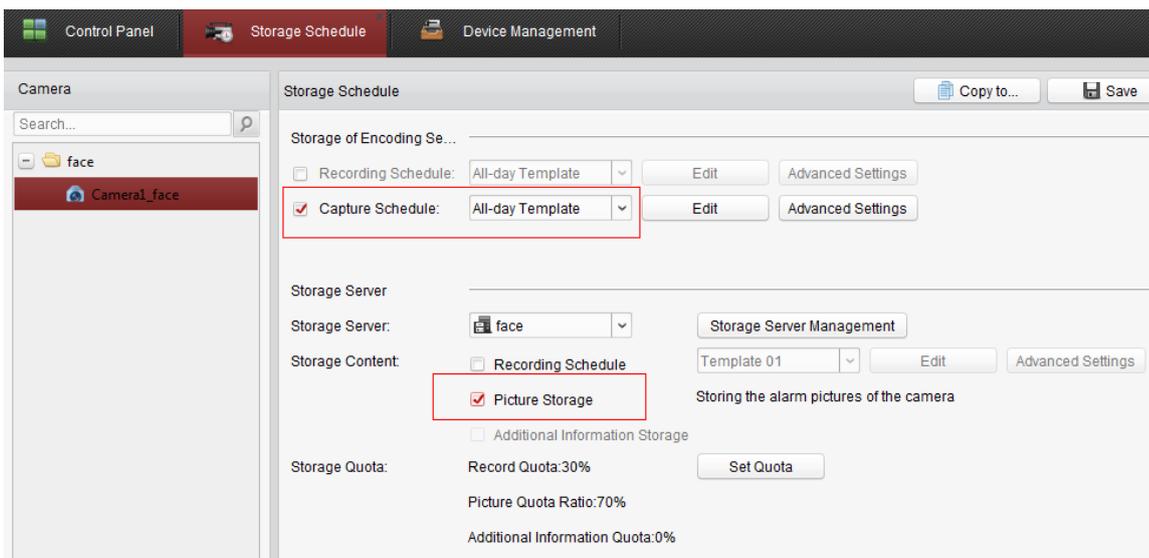
- 1) Format HDD.



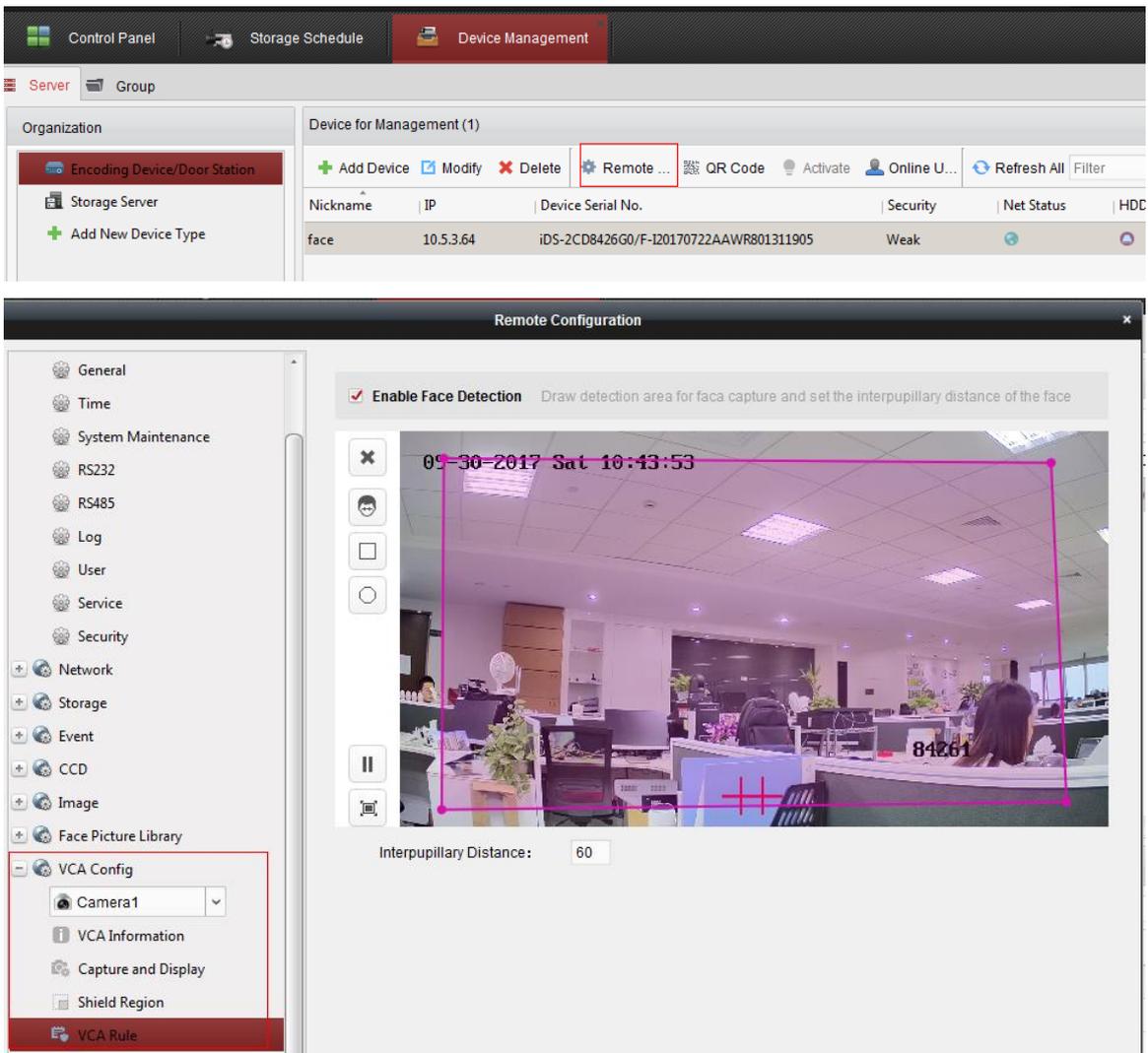
2) Configure Quota Ratio for record and picture.



Step 3: Enter [Control Panel]-[Storage Schedule]. Configure the Capture Schedule and check Picture Storage.



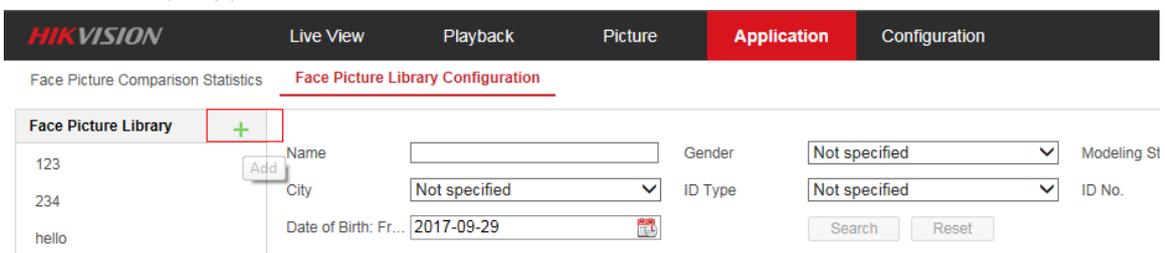
Step 4: Enter [Device Management]-[Remote Configuration]. Face detection function can be configured in VCA Config. The configuration is same with the way in the web.



2.3 Configure Face Picture Library via IE browser

Step 1: Enter [Application]-[Face Picture Library Configuration], click “+” to create face library.

NOTES: It only supports to create 3 face libraries.



Step 2: After clicking add, it is necessary to configure Face Picture Library Name and Threshold.

NOTES: The threshold value is used to define the comparison similarity. When the similarity is equal to, or higher than the threshold, the camera would push the compared alarm picture to NVR or IVMS-4200.

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

Add

Face Picture Library Name ✓

Threshold ✓

Remarks

Step 3: Import the face picture.

If you click "Add", the picture is added by one piece.

ID Type	ID No.	Modeling Status
Unknown		Succeed

If you click "Import", the batch picture can be imported.

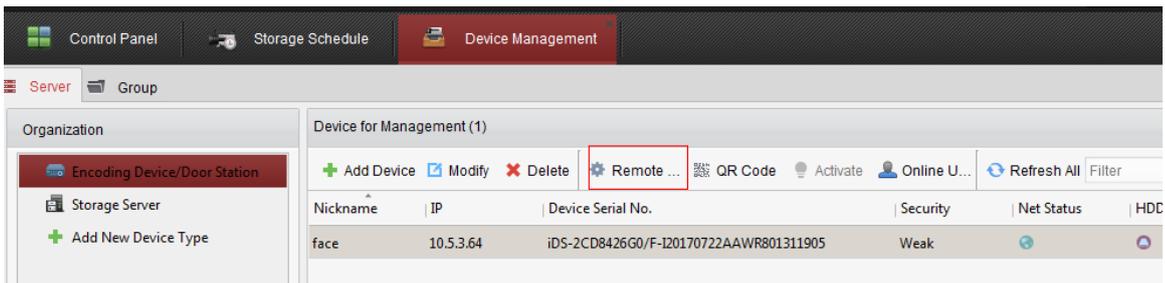
Date of Birth: Fr...

☰

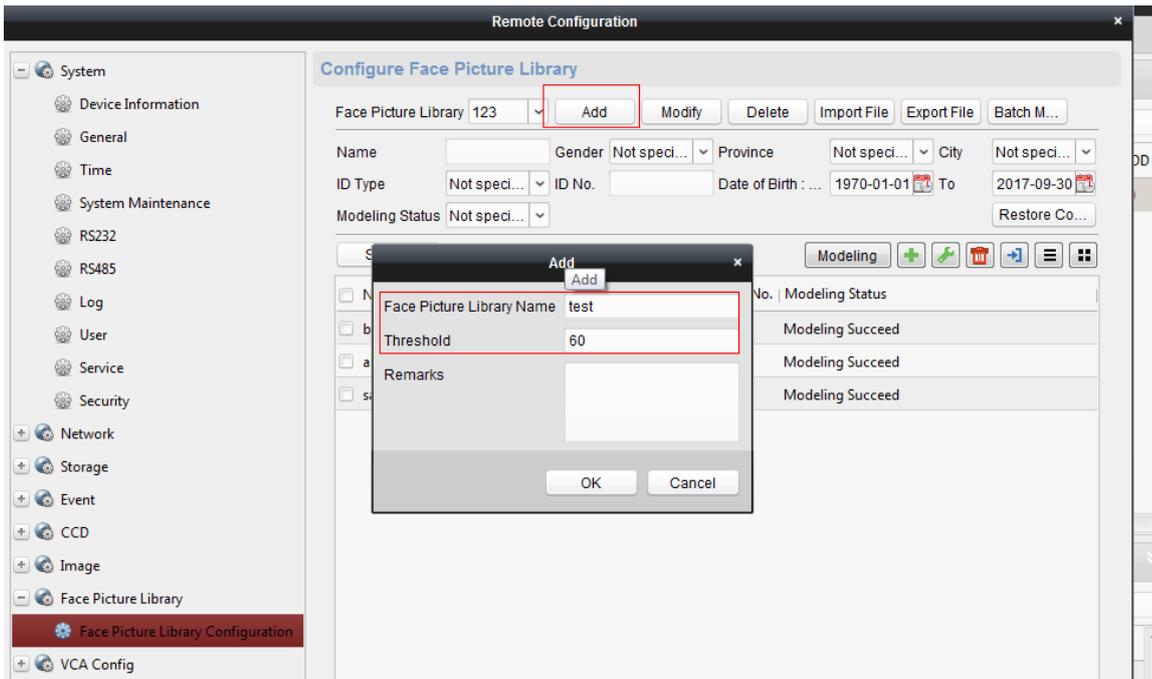
ID Type	ID No.	Modeling Status
Unknown		Succeed

2.4 Configure Face Picture Library via IVMS-4200

Step 1: Enter [Device Management]-[Remote Configuration]-[Face Picture Library]-[Face Picture Library Configuration].

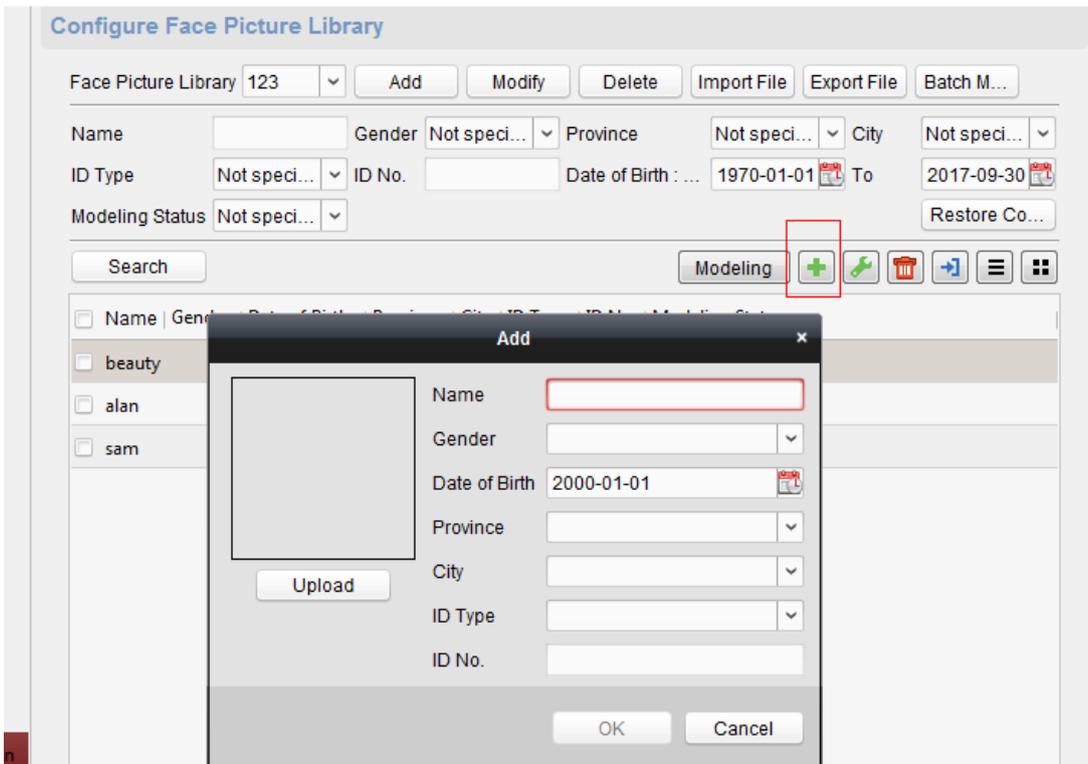


Step 2: Add a new Face Picture Library.

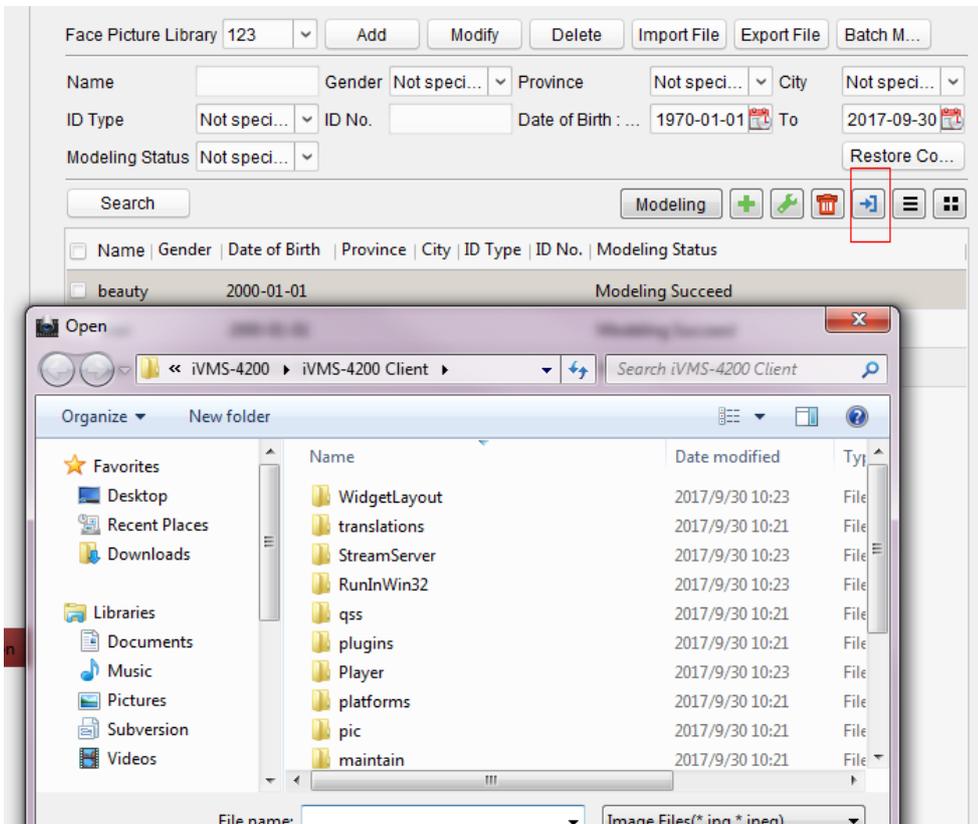


Step 3: Add or import the picture to the face picture library.

Add by one piece:

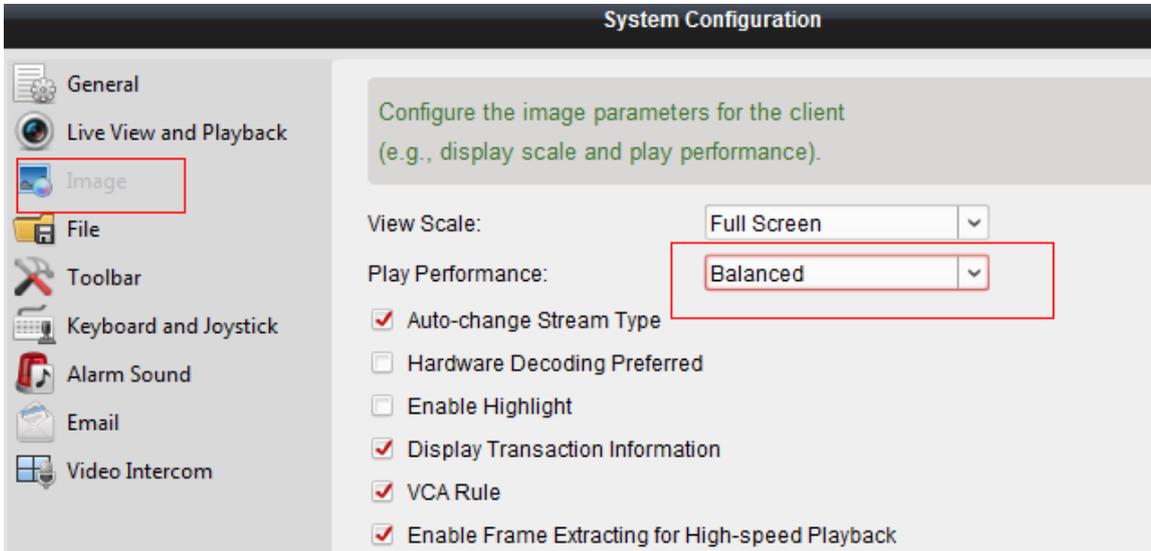


Batch Import:

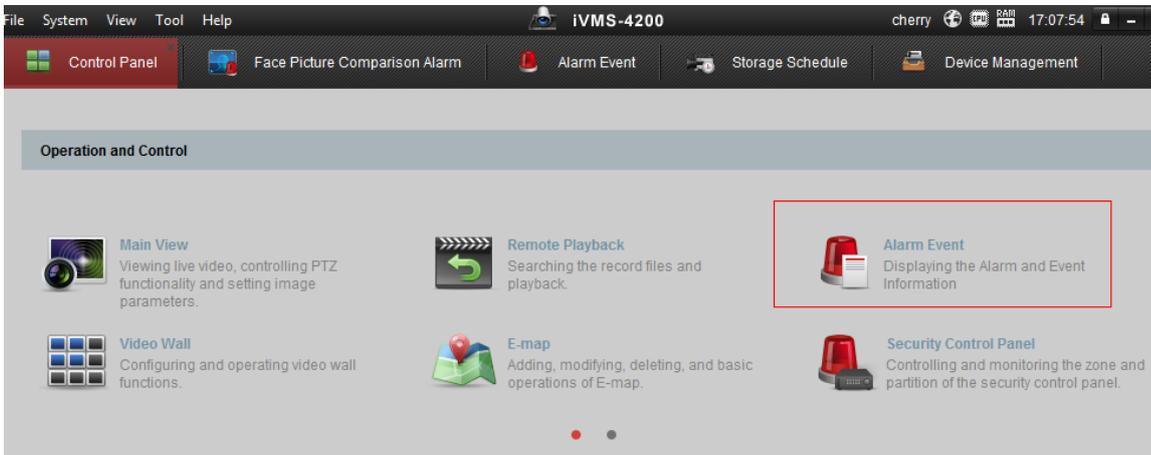


2.5 Result Demonstration

Step 1: In IVMS-4200, enter [Tool]-[System Configuration]-[Image]. Set up the Play Performance as Balanced mode.



Step 2: Enter [Alarm Event]. Click “” button to check the face comparison result.



索引	报警时间	报警源	报警细节	报警内容	预览	发送邮件	注释
1..	2017-02-18 12:46:21	摄像头-10.96.8.189	摄像头1..	人脸识别报警			
1..	2017-02-18 12:46:21	摄像头-10.96.8.189	摄像头1..	人脸识别报警			
1..	2017-02-18 12:43:39	摄像头-10.96.8.189	摄像头1..	人脸识别报警			
1..	2017-02-18 12:43:39	摄像头-10.96.8.189	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:56	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:56	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:48	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:48	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:47	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:46	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:45	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:44	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:42	摄像头-10.2.32.60	摄像头1..	人脸识别报警			
1..	2017-02-18 12:42:42	摄像头-10.2.32.60	摄像头1..	人脸识别报警			

The face comparison result is shown as below. It will display the Age and Similarity information in IVMS-4200.

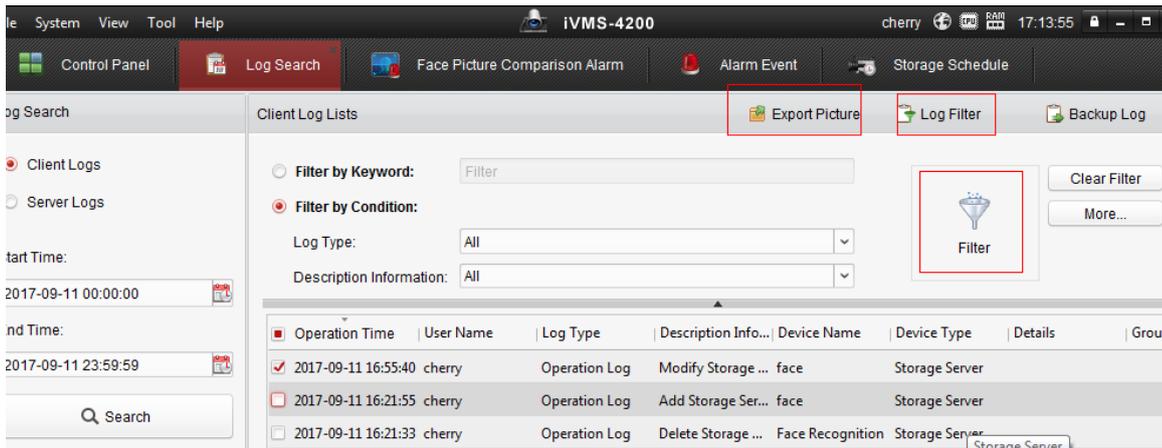
NOTES: If you want to display the Name and Gender information, it needs to edit them when add/import the picture to the face picture library.

The screenshot displays the IVMS-4200 interface. On the left, a 'Camera' panel shows 'Camera1_face' selected. The main 'Live View' window shows a video feed from 'Camera 01' with a timestamp of '09-12-2017 Tue 15:49:59'. Green bounding boxes are drawn around faces in the video. Below the live view is a 'Historical Face Capture' strip showing five frames with timestamps: 15:44:44, 15:45:06, 15:45:14, 15:45:40, and 15:46:15. On the right, a 'Face Picture Comparison' panel shows three comparison results:

- Top: Name: alan, Gender: (blank), Age: 30. Similarity: 93%, Snaped Time: 14:40:57.
- Middle: Name: alan, Gender: (blank), Age: 23. Similarity: 92%, Snaped Time: 14:41:38.
- Bottom: Name: beauty, Gender: (blank), Age: 22. Similarity: 82%, Snaped Time: 14:42:06.

Step 3: The captured face picture can be exported by IVMS-4200 or Web.

1) In IVMS-4200, enter [Control Panel]-[Log Search].



2) In Web, enter [Application]-[Face Picture Comparison Statistics]. Input the Start and End time, then click search.

