



HIKVISION

Hikvision Facial Recognition Solution

International Product Presales Team



First Choice for Security Professionals

- Background Introduction
- Product & Application Introduction
- Success Cases

Background Introduction

-Foreseeable Value of Face Recognition

- 
- Maintain Public Security
 - Commercial Productivity Increase
 - Security Industry Trends & Requirement



Why Face Recognition?

Public Security Threats

On May 22th 2017, suicide bomb terrorist attacked at Manchester Stadium, 22 died, 59 injured.

On November 13th 2015, terrorist attacked at Paris, 132 died, hundreds of people injured.

...

Society Productivity- Enhanced Efficiency Demand

Commercial statistics show that 80% of the bank's revenue comes from 20% of VIP customers

...

Video Surveillance Industry Developing Trend

Safe-city projects, Home Guarding are underway over the world, human & vehicle are common interested objects. Camera No./base & resolution increase dramatically brings storage challenge.

Useful data fast tracking from big-data video highly required



Business Model Change | From Quantity to Quality

sale



SERVICE

Nowadays, as the fierce competition, there is a trend for business strategy move forward to service from traditional product selling.

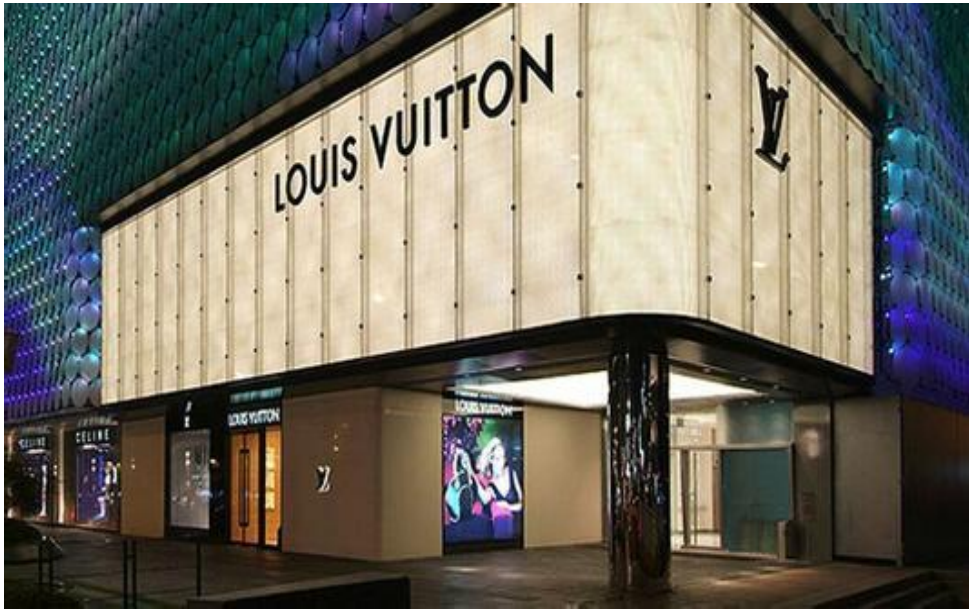
So, how to increase customer satisfaction has been the key element. Particularly, for those VIP customers, it's necessary to make a specific service treatment to make them enjoy the exclusive and considerate experience as soon as they arrived.

Customer satisfaction will boost sales growth!





Service Marketing | Drive Commercial Profits Increase



In the highly competitive high-end retail industry, it is important to win more VIP customers.

Statistics show that 80% of the bank's revenue comes from 20% of VIP customers.



Pains & Requirements of Security Industry

How to find the suspected person during post-investigation?

A mass of cameras



Resolution increase brings video storage challenges

How to realize pre-alarm (Black-list etc.) to prevent incidents?

Only certain persons can be allowed, how to do this?

Who can tell me is this 2 face pictures are the same person, even though there is decade-yeas gap?

Extract useful (~5%) information from massive data

Un-satisfied accuracy and efficiency for traditional recognition

Distinguish person characteristics, make reasonable strategy-change?

Get out the trouble with Hikvision Face Recognition Solution

Insufficiency of Traditional Face Recognition Solution

Traditional intelligent video surveillance has especially strict requirements for a scene's background. For human facial recognition process, two key steps are required:

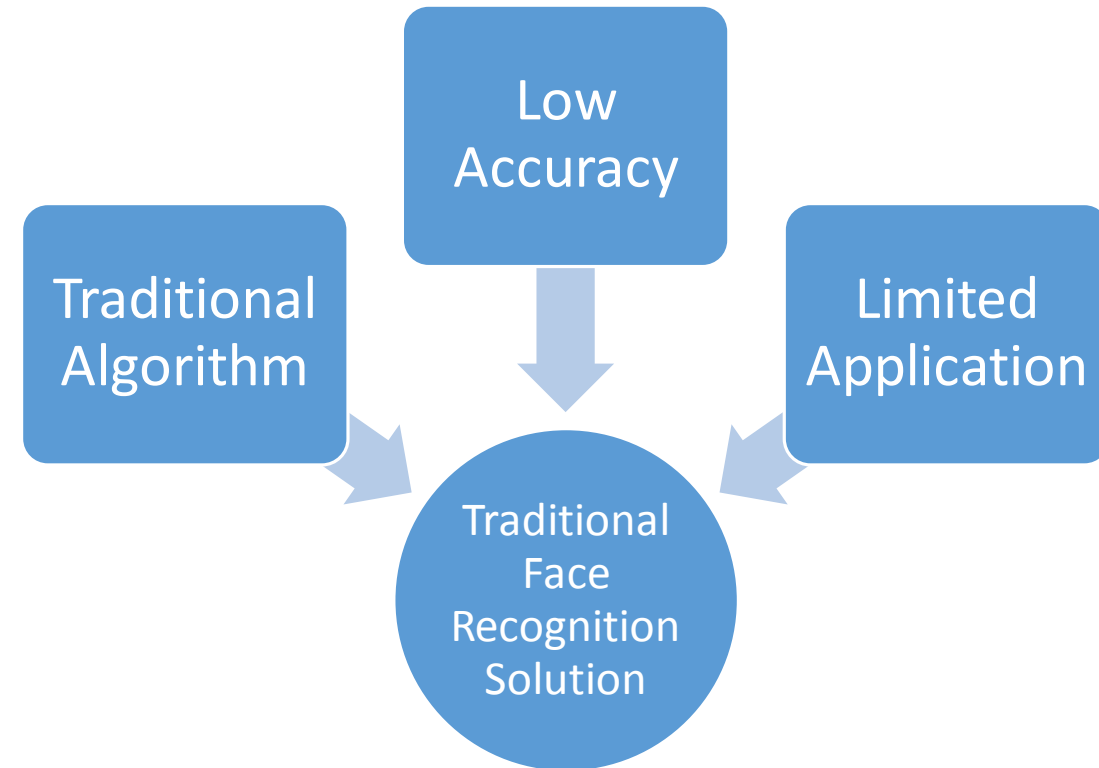
- features extraction

- ❑ The features are designed by humans and always are subjective. More abstract features can be too difficult to detect.
- ❑ Perform well in very specific environments, subtle changes (image quality, shifting angles and lighting, environment, etc.) yield significant challenges to accuracy.



- “classification learning” performing

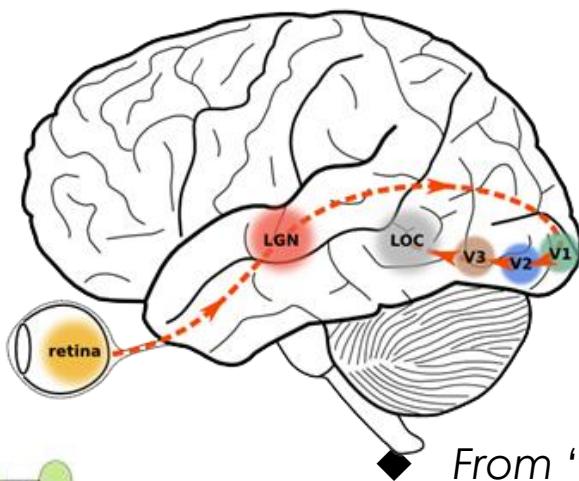
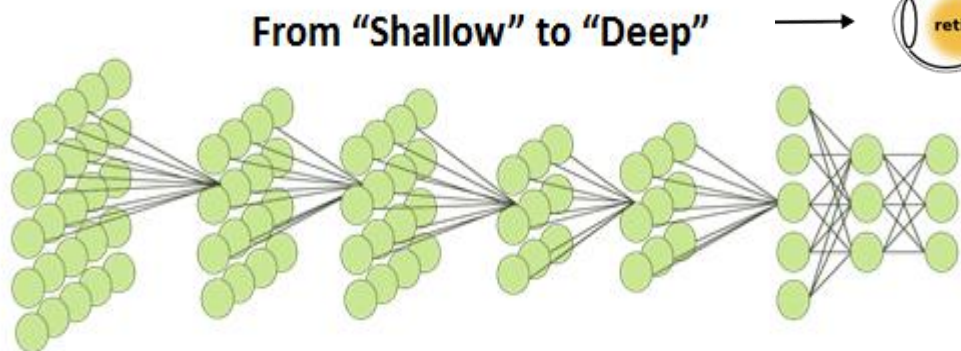
- ❑ Use shallow learning and analysis results are far from ideal. The results directly restrict the breadth and depth of intelligent applications.



Advantages of Deep Learning Algorithms

Deep learning is intrinsically different from other algorithms. The way it solves the insufficiencies of traditional algorithms is encompassed in the following aspects.

◆ From “Shallow” to “Deep”



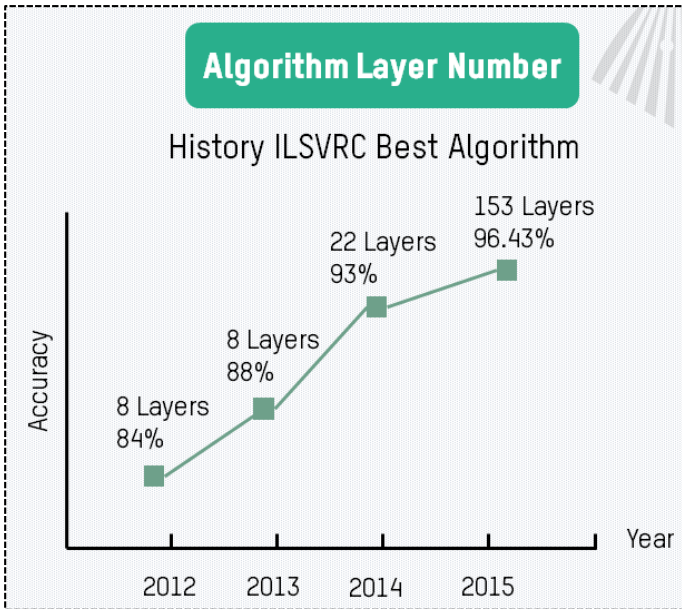
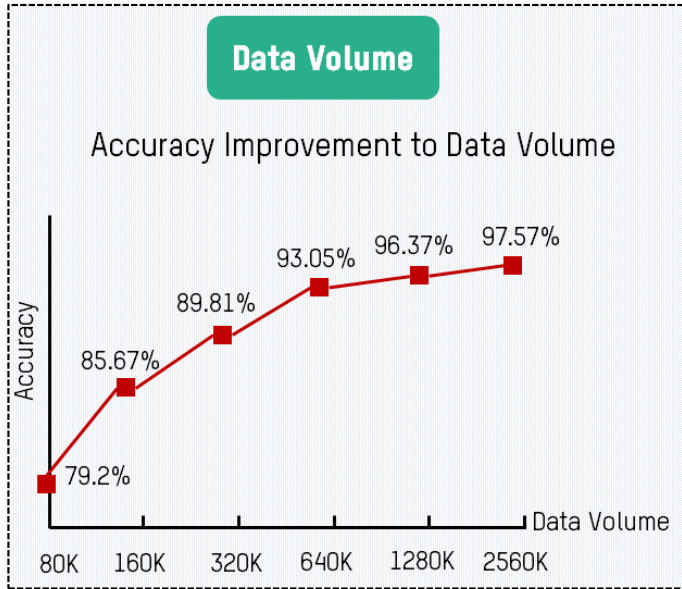
Human Brain
Simulation

◆ From “Artificial Features” to “Feature Learning”

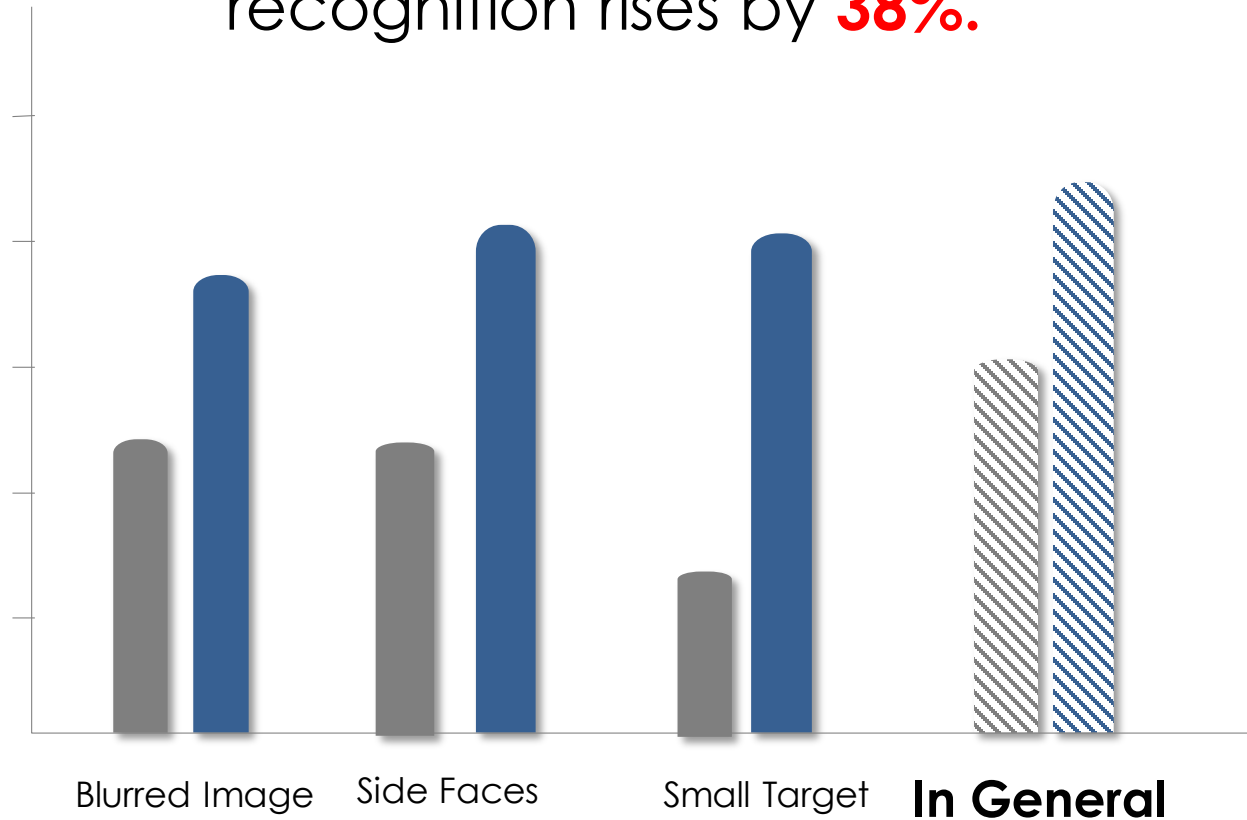
From “Artificial Features” to “Feature Learning”



Deep-Learning Benefits Intelligent Video Surveillance



With deep learning technology, the average accuracy of face recognition rises by **38%**.



Our advantages on Artificial Intelligence of Security



Own an excellent algorithm developing team



Win in multiple International Deep Learning algorithm competitions



Adopt the most powerful GPU as the computer platform

Competition	Item	Rank	Time
ImageNet	Scene classification	No.1	2016
PASCAL VOC	Object detection	No.1 (world record)	2016
MOT Challenge	Multi-target tracking	No.1	2015
ImageNet	Target Location	No.2	2016
TRECVID	Event detection	No.2	2016

Highlights

Open solution

- Can be integrated to management systems via SDK、ISAPI、ONVIF protocol, or connected to access systems via wiegand or RS485 protocol



Multi models and shapes available

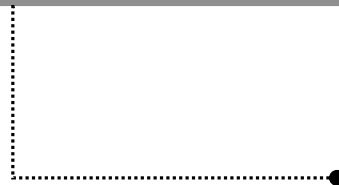
- A wide variety of front-end or back-end models (combinations) are available to meet different scenarios and environment.

World wide support

- By the moment, all human faces around the world are supported, while for Asian people, will has better recognition effect.



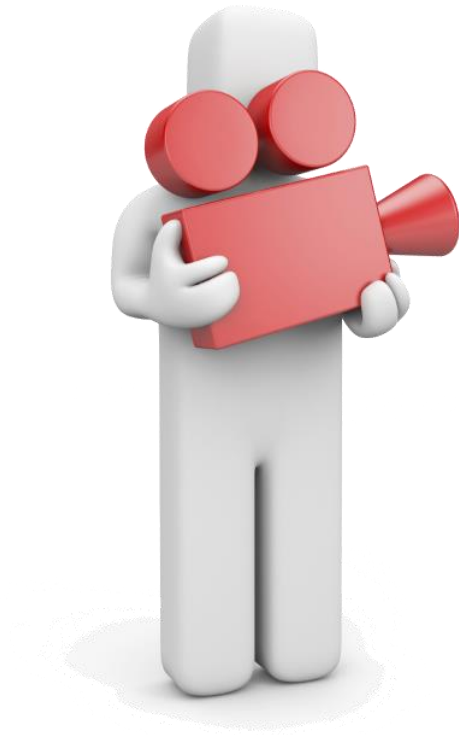
Product & Application Introduction



- Application Topology
- Product Introduction

The Flow Chart of Face Recognition System

Several common application types



Real-time face comparison and alarm



Face retrieval - 1 : N comparison



Face comparison - 1 : 1 comparison



Statistics according to features



DS-2CD7A26G0-IZHS
DS-2CD7126G0-IZS
DS-2CD7026G0-AP

DeepinView Face
Capture Camera



iDS-2PT9122IX-DE/F

DeepinView PT
Camera



iDS-2CD8426G0/F-I

DeepinView Dual-Lens
Face Recognition Camera



iDS-9632NXI-I8/4F
iDS-9600NXI-I16

DeepinMind Series
NVR

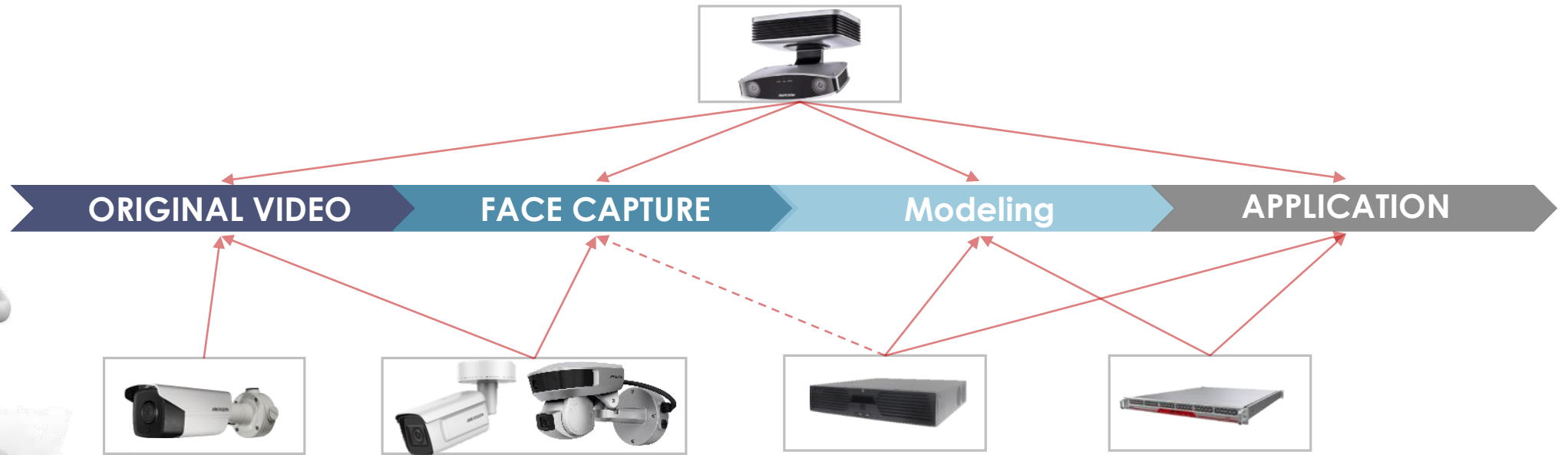


DS-IE63XX-E/FA

DeepinMind Face
Recognition Server

The Flow Chart of Face Recognition System

Which links dose the following products lie in?



DeepinView Face Capture Camera



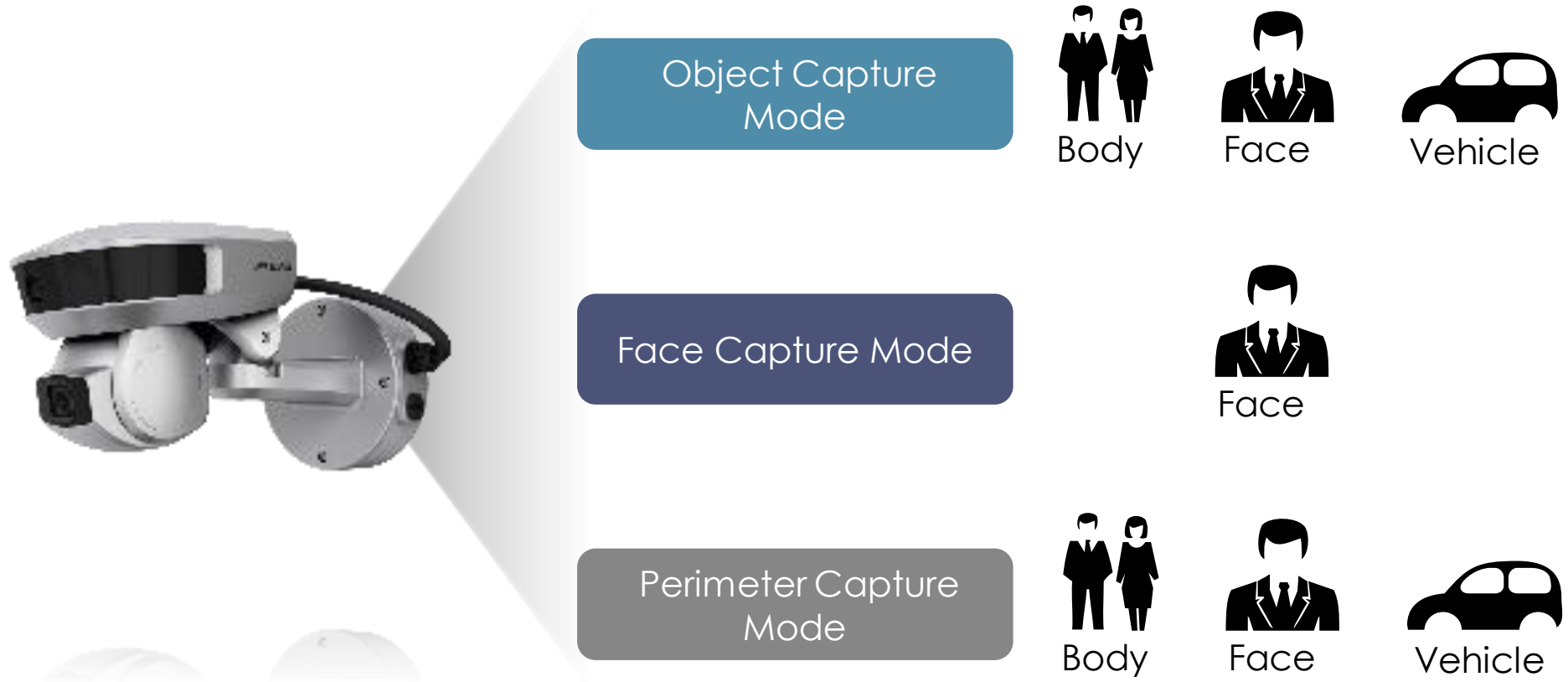
Face detection and capture

DS-2CD7A26G0-IZHS
DS-2CD7126G0-IZS
DS-2CD7026G0-AP



- 1080P Resolution
- DarkFighter ultra low light
- 120dB WDR
- 3D DNR

DeepinView PT Camera



For face recognition system, face capture mode is recommended to achieve higher capture rate and quality as well as less repetitive faces.

DeepinView PT Camera



ORIGINAL VIDEO

FACE CAPTURE



Face detection and capture

iDS-2PT9122IX-DE/F



Distant View Camera

- 1/2.7" progressive scan CMOS
- Up to 2MP resolution
- 120dB WDR

Tracking PTZ Camera

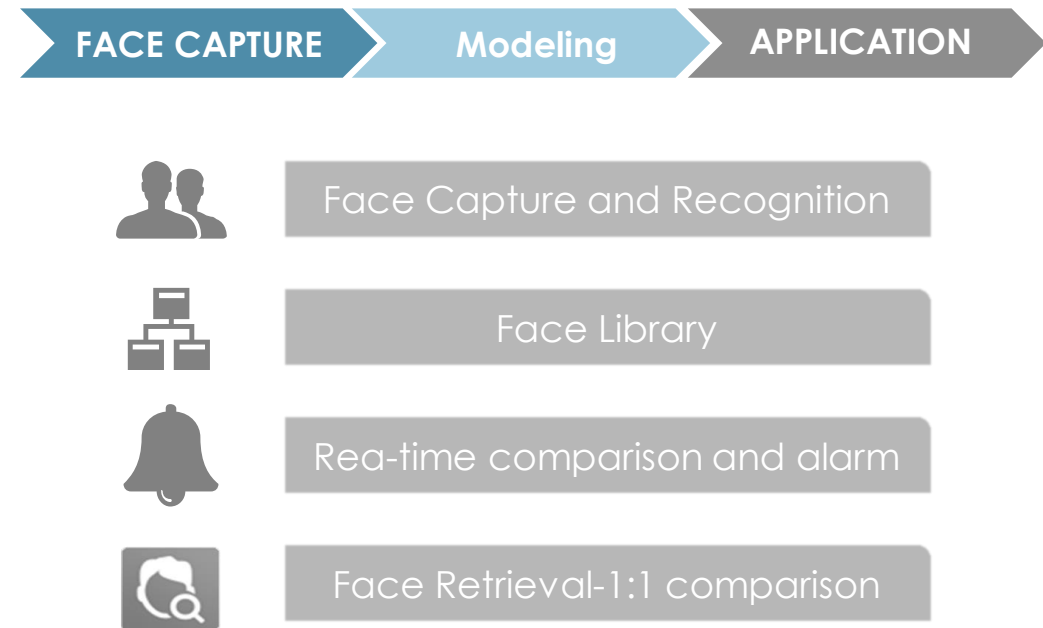
- 1/2.7" progressive scan CMOS
- Up to 2/4MP resolution
- 120dB WDR
- Eagle vision focus
- 4/10× Optical Zoom, 16× Digital Zoom

DeepinMind Face Recognition NVR

iDS-9632NXI-I8/4F



- Built-in GPU and built-in deep learning algorithm for quick and effective data modeling and analysis
- 4-ch real-time face comparison
- 4 face libraries with up to 100,000 pictures



DeepinView Dual-Lens Face Recognition Camera



iDS-2CD8426G0/F-I



Face detection and capture



Face Library



Rea-time comparison and alarm

- 1/2.8" Progressive Scan CMOS
- 1920 × 1080 @ 30fps
- 120dB WDR
- H.265+, H.265, H.264+, H.264
- 5 video streams
- IR range up to 10 m

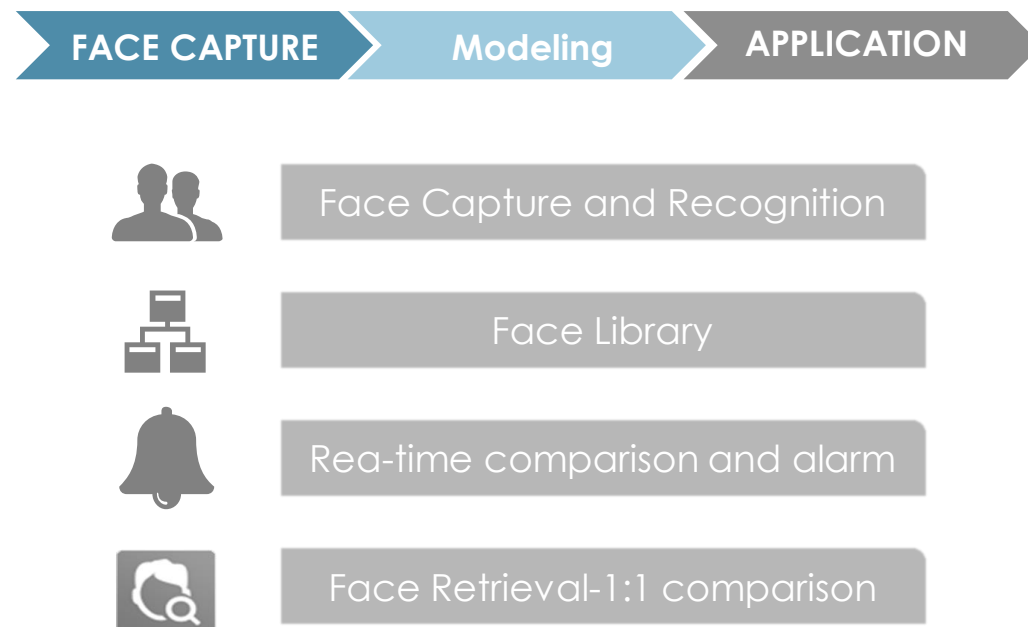
DeepinMind Face Recognition Super NVR

iDS-96064NXI-I16

iDS-96128NXI-I16



- up to 32-ch facial recognition
- 16 Face picture libraries, up to 300,000 pictures



Face Recognition Server Stand-alone Server

DS-IE6308/16/32/64-E/FA



- up to 64-ch facial recognition
- 16 Face picture libraries, up to 1,000,000 pictures
- Facial modeling capability: Up to 80pic/s



Facial Recognition



Face Library



Real-time comparison and alarm



Face Retrieval



1V1 Comparison

Facial Recognition Solutions

1. IP Camera + VMS

- DeepinView Dual Lens Facial Recognition Camera
- iVMS-4200/iVMS-5200E/Hik-Central





2. IP Camera + NVR + VMS

- Face Capture Camera
- DeepinMind NVR
- iVMS-4200/iVMS-5200E/Hik-Central

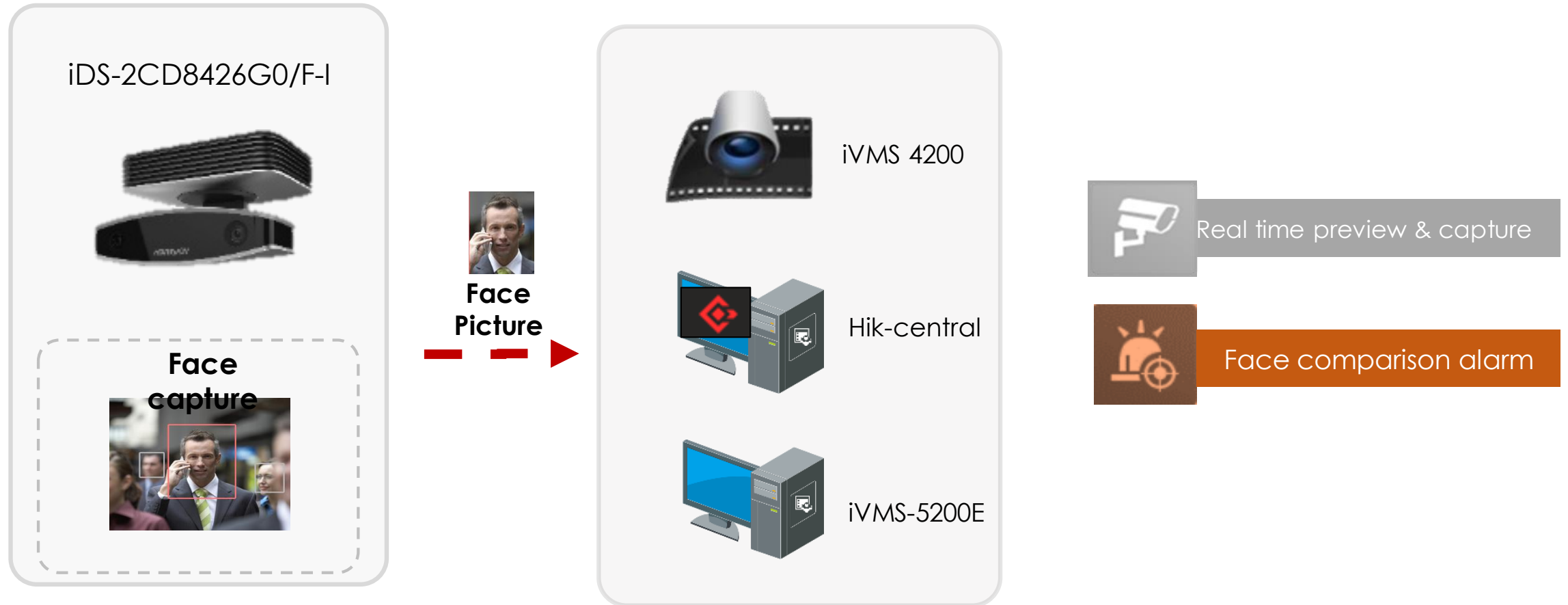
3. IP Camera + Server + VMS

- Face Capture Camera
- Face Recognition Server

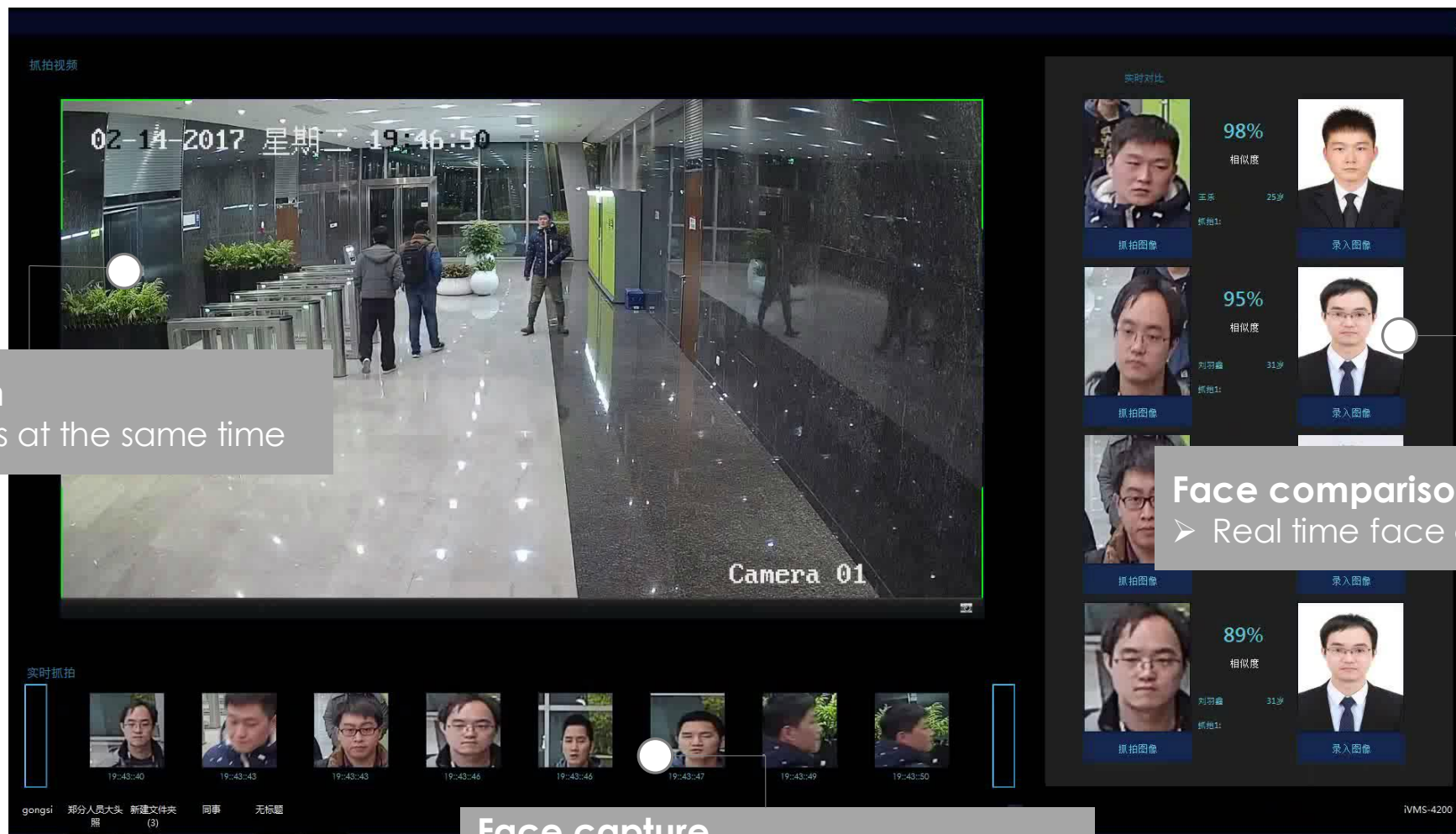
Solution Comparison

System Structure	Face Comparison	Search by face picture	1V1 Comparison	Face Library and Picture Requirements
	support	-	-	<ul style="list-style-type: none"> • 3 Libraries: up to 90,000 pictures • Face Library storage: up to 3GB 40 <Min. Pupil Distance <300 (recommend 60) pixels. 20KB <Photo Size<300KB JPEG
	support	support	-	<ul style="list-style-type: none"> • 16 libraries: up to 100,000 pics • Face Library storage: up to 5GB 40 <Min. Pupil Distance <300 (recommend 60) pixels. 20KB <Photo Size<300KB JPEG
	support	support	support	<ul style="list-style-type: none"> • 16 Libraries: up to 1,000,000 pictures 40 <Min. Pupil Distance <300 (recommend 60) pixels. 20KB <Photo Size<300KB JPEG
	support	support	support	<ul style="list-style-type: none"> • 1,000,000 pictures 40 <Min. Pupil Distance <300 (recommend 60) pixels. 20KB <Photo Size<300KB JPEG

Solution 1: Dual-Lens Facial Recognition Camera



DeepinView Dual-Lens Face Recognition Camera



Face detection

➤ Up to 30 faces at the same time

Face comparison

➤ Real time face comparison alarm

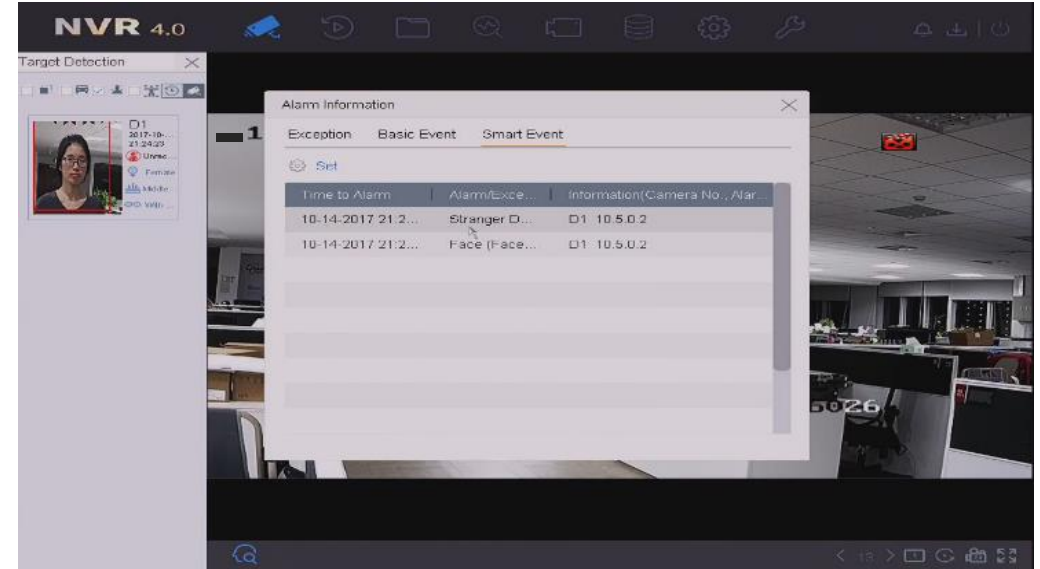
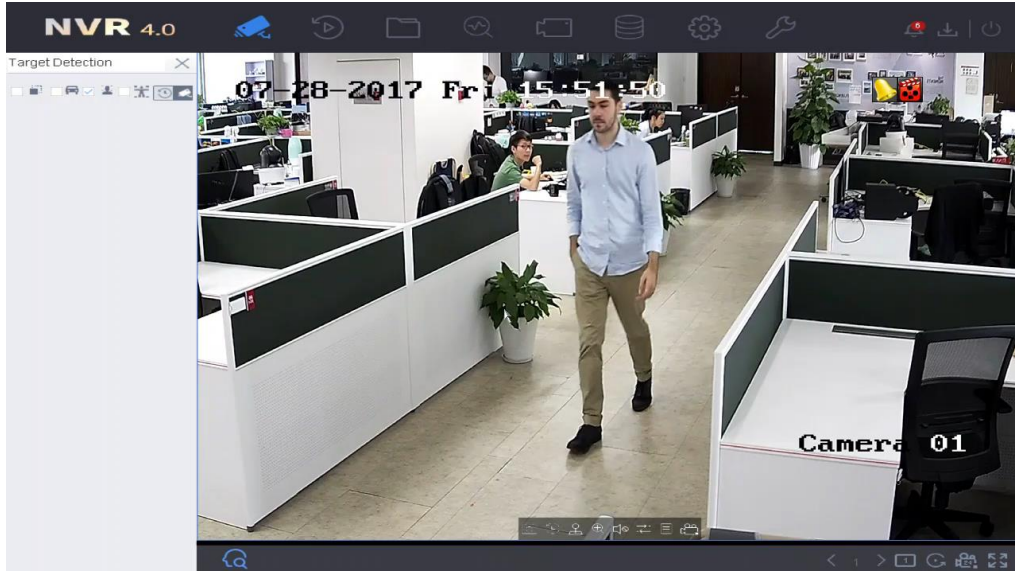
Face capture

➤ 1080P pictures and crop facial images simultaneously

Solution 2: Camera + NVR + VMS



Facial Recognition – Face Comparison



1:N

Similarity > 80 %
Result: **ALARM!**
(Normal Mode)

Capture Face library

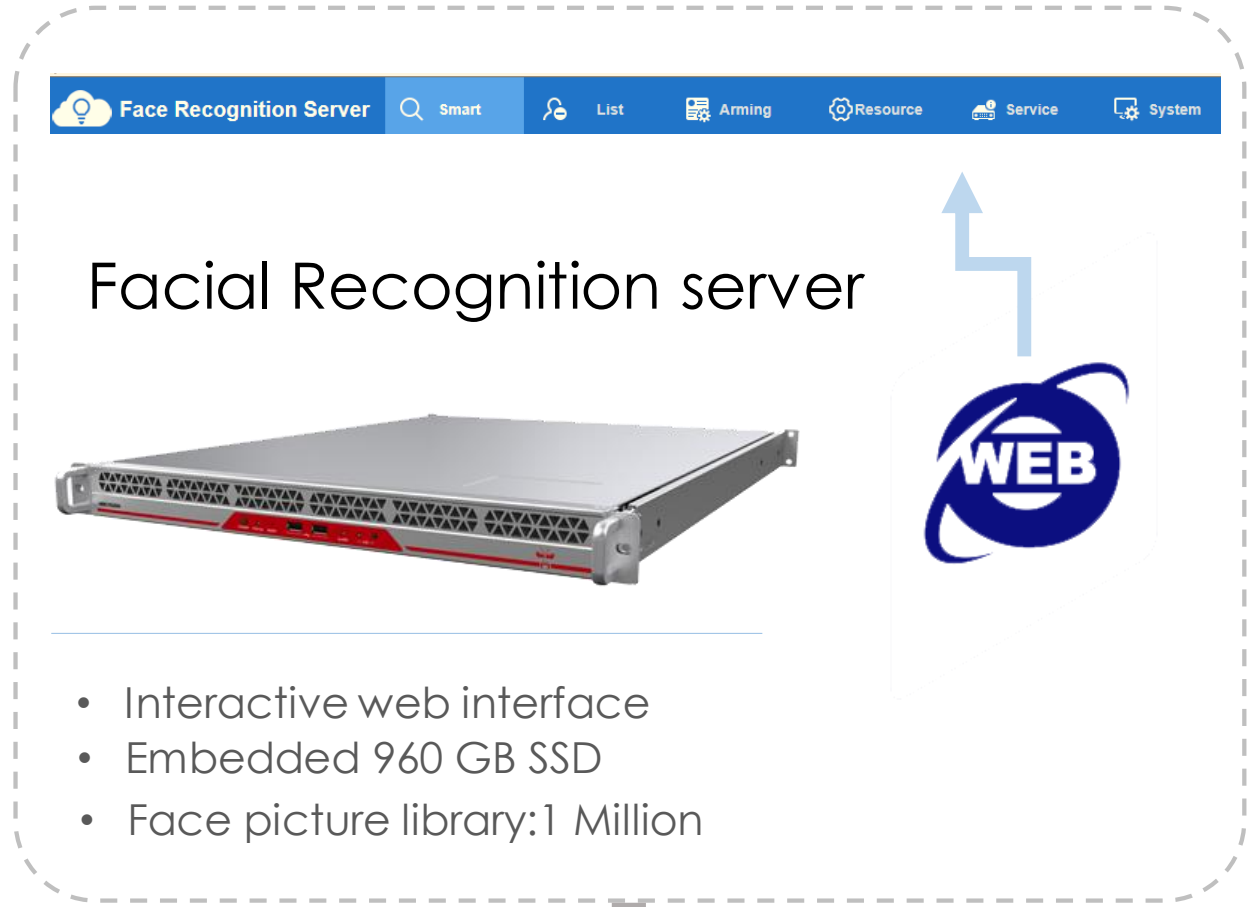
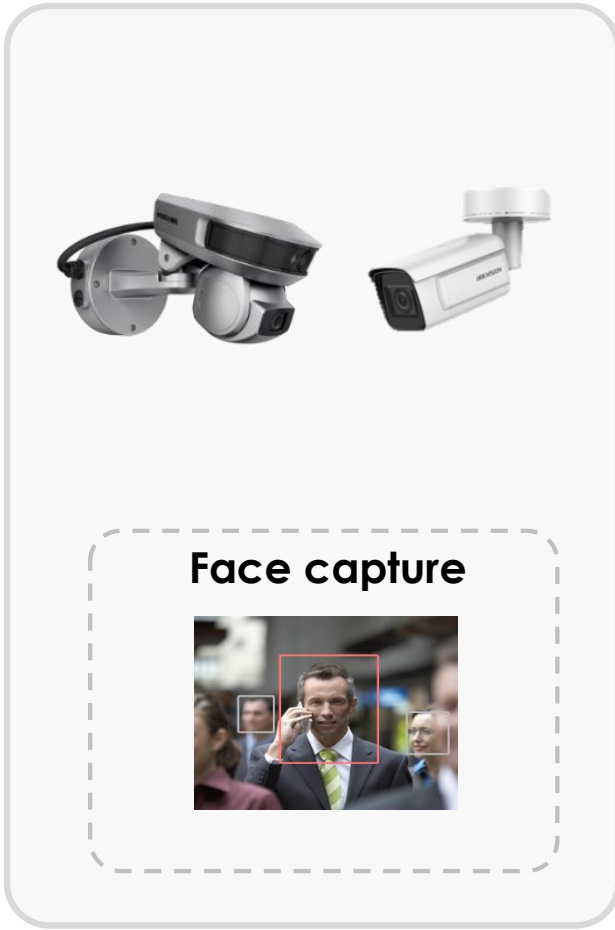
1:N

Stranger Detection

Similarities < 70%
Result: **Stranger!**

Capture Face library

Solution 3: Camera + Server



Key features



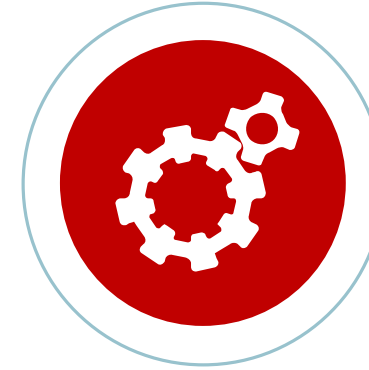
High performance & Good scalability

- Millions of black list support by 1 server
- Massive face search in seconds among millions of face library;



Variety Functions

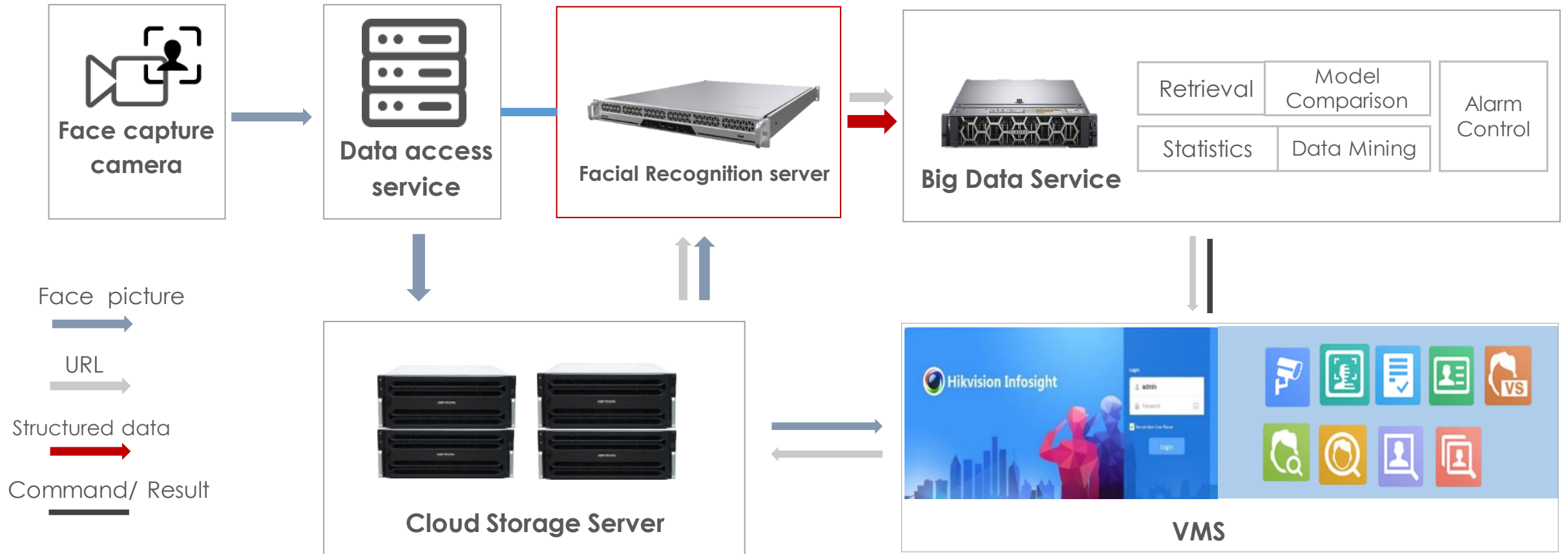
- APP support of face recognition;
- People trace tracking
- Massive face search and identity confirmation



Good Scalability

- Analytical server can form cluster to support large project;

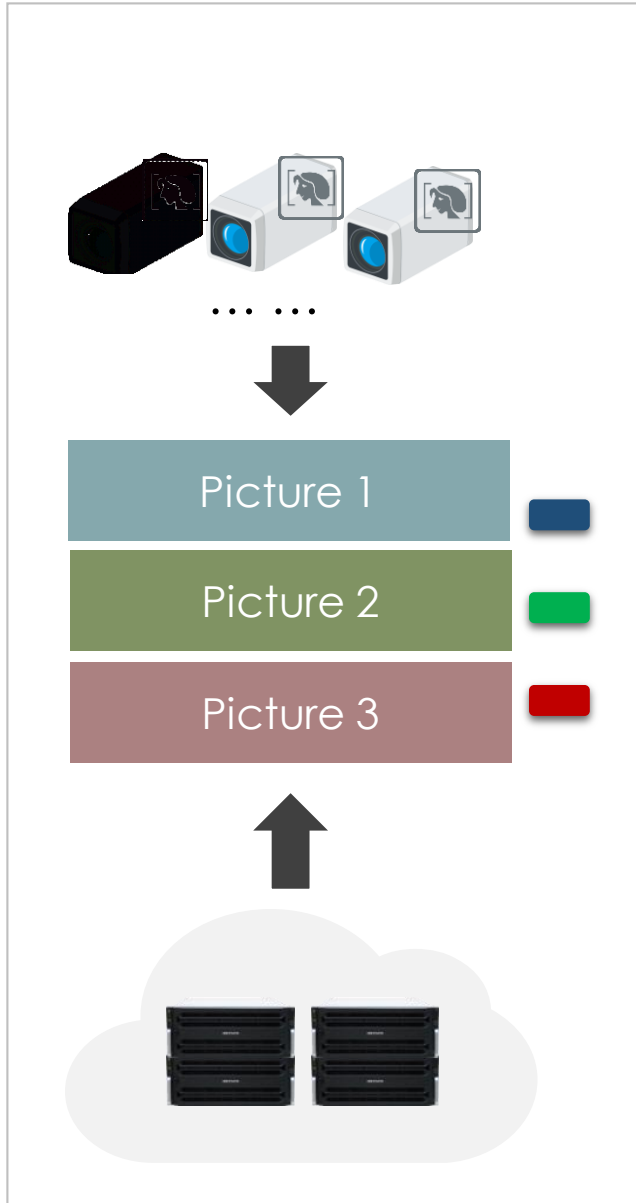
System Structure



FUNCTIONS

This system supports face applications, such as real-time capture, real-time alarm, history alarm, 1V1 Comparison, search by picture, search face picture, ID authentication, etc.

Cloud Analysis and Storage






Cluster analysis is efficient and reliable





Cloud Storage VS Traditional Storage

Cloud Storage

- Service Data Management 
- Rich surveillance application 
- Virtualization 
- Load Balance 

NVR & IP SAN

- No Load Balance 
- No Virtualization 

NAS Cluster

- Poor Application 
- High Load in VMS Server 

Application Scenario & Success Cases

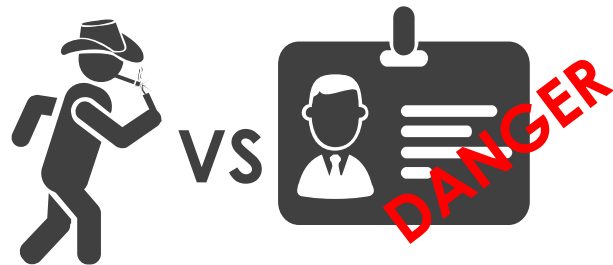
Typical Applications of Facial Recognition Blacklist Alarm



Airport/Customs



Enhance public security,
and eliminate/prevent
criminal activities.



Application

Efficiently identify
suspects and inform
security personnel
with fast face
retrieval.

VIP Recognition



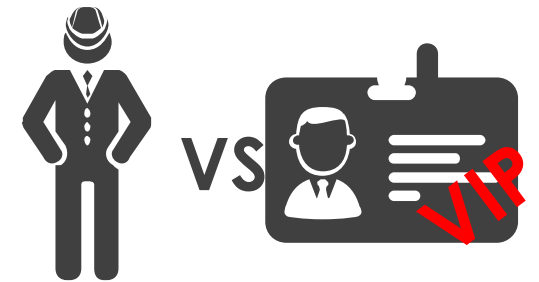
Bank/Casino



Recognize VIP customers, provide better service, improve customer satisfaction.

Application

Use facial recognition technology to boost business and increase profits by providing better services.



Stranger Identification



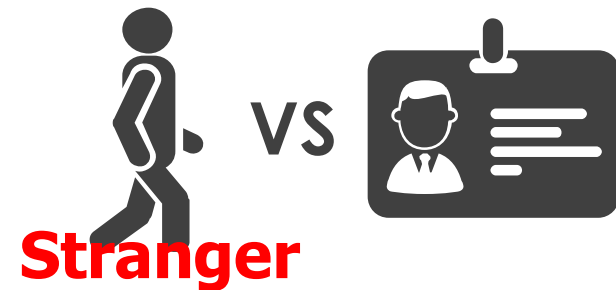
Residential area/Factory/Substation



Stranger identification, unauthorized entry alarm

Application

Prevent intrusion and enhance security of premises with facial recognition technology.



Attendance Management



Company/School



Entrance & exit control,
attendance management

Application

Verify people's identity
automatically to
control access and
manage attendance.



VS



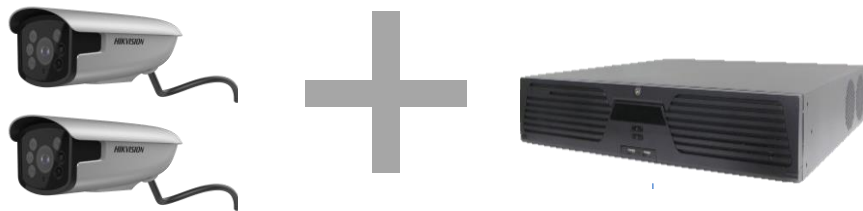
authorized

Successful Story

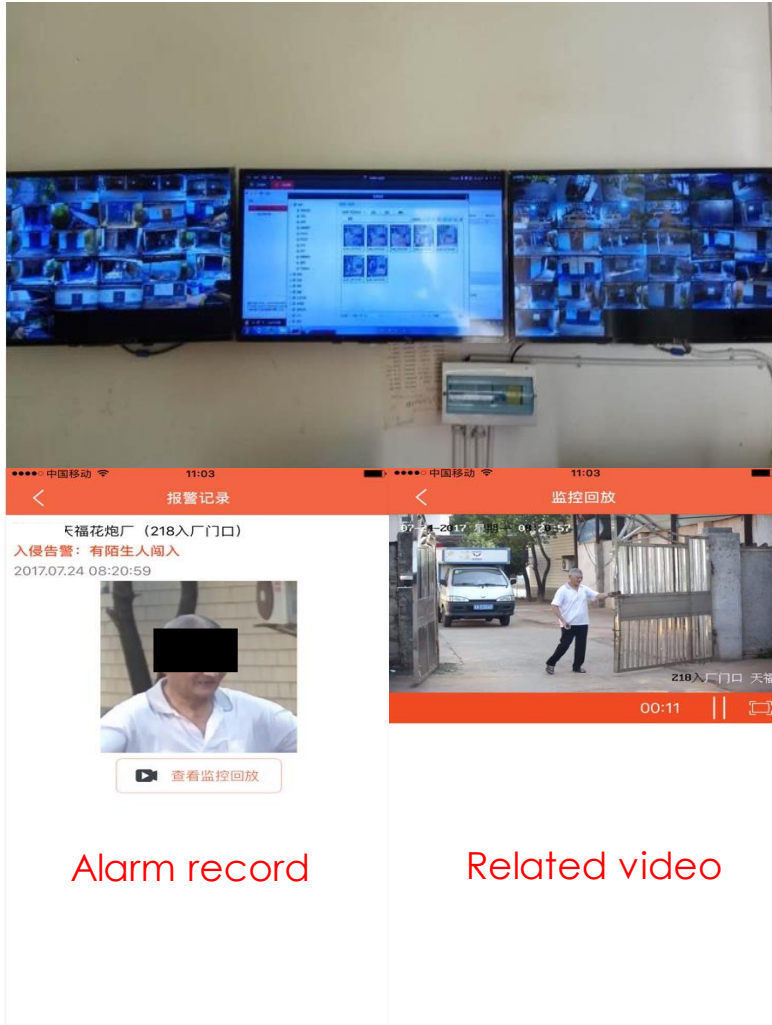
Smart Community Project

Project Overview:

At the main entrances and exits deployed DeepinView Face Capture Cameras and DeepinMind NVR. All of the residents can pass the gate easily without key or card while strangers can not.



Successful Story



Background

Firework factory, as a dangerous article manufacturer has strict access management control. Strangers are not allowed to enter. 8 face capture cameras and 2 DeepinMind NVR are deployed.

Functionality

Factory staff face pictures are imported into DeepinMind NVR as whitelist(require customization). If the face capture camera recognize someone not on the whitelist entering the factory, alarm will be triggered to notify security guard.

Product List

- Camera: face capture camera
- NVR: iDS-9632NXI-I8/4F
- VMS: iVMS-4200

Successful Story

Smart City Project in Singapore

Project Time : 2017-

Project Overview

Projects involving more than 1500 sets of front-end subsystem and 1000+ sets of Cloud Analysis server also to help police department to identify suspects, monitoring security event, quickly find key vehicle and information to assist police investigation



Successful Story

Safe City Project in Ukraine

Project Time : 2017.12

Project Overview:

The project involves a set of common devices front-end monitoring, intelligent face, checkpoint, intelligent analysis servers, big data servers and 8600 platform software, the cameras channels are about 400+, which is a large scale, full function, complete safe city system. The demonstration significance and continued producing great grain.





The News of security project in Ukraine

Successful Story

HIKVISION

G20 Summit Hangzhou security

The 11th G20 Summit, which is an most important international summit held in Hangzhou of China in 2016. The requests of security of G20 is highest level in the world.

During the summit, HIKVISION acted as a leading role with a series of advanced technologies and integrated security solution, and helped Hangzhou's government and civil police to implement the security tasks successfully. HIKVISION were highly praised by Chinese government after G20 Summit.



G20 2016 CHINA

The logo for the G20 2016 summit in China, featuring the text 'G20 2016 CHINA' in a stylized font with a red Chinese seal to the right of '2016'. The text is overlaid on a background of green wavy lines.

Successful Story



Background

More than 150 hiding suspects have been arrested just in 3 months in China XX city since the deployment of Face capture camera and Facial Recognition server,

Functionality

Face recognition camera iDS-2CD8426G0/F-I is used to capture human face picture on different spots (**entrance and exit of main stations/shopping mall ,ticket office, hospital, trunk road, underpass**). Face capture are uploaded to server DS-IE6364-E/FA to compare with face blacklist. Alarm will be triggered once they match and will be sent to a mobile app.

User Benefits

- High efficiency, high accuracy
- Recognize the escaped criminals and informs the police to catch them successfully.

Project List

- Camera: iDS-2CD8426G0/F-I
- Server: DS-IE6364-E/FA
- VMS: iVMS-8200

Thanks

See far Go further