** alhua** TECHNOLOGY

DHI-IVS-GS8000-GU2-HW

Dahua Comprehensive Analysis Intelligent Server

System Overview

DHI-IVS-GS8000-GU2-HW Dahua Comprehensive Analysis Intelligent Server is a back-end comprehensive analysis and comparison intelligent server. It is compatible with a wide range of analysis and comparison software, and extracts features and attributes from images and videos of the faces and bodies of humans and of motor and non-motor vehicles. It also provides functions such as face detection, face arming and search by image.

Functions

Target Classification

Classify targets including human, motor vehicles and non-motor vehicles. Generate intelligent structured analysis on the live video, history video (when using with the platform), and the video files that were uploaded offline, and then extract structured information on the moving targets.

Motor Vehicle Detection

Detects motor vehicles by a wide range of attributes such as type, color, brand and plate number. It also detects both driver and co-driver behaviors. For drivers, it detects when they are not wearing their seatbelt, calling while driving and smoking. For co-drivers, it detects when they are not wearing their seatbelt and carrying a baby. With its advanced algorithm, it can also detect tissue boxes, sunshields, pendants, perfume, cards and permits.
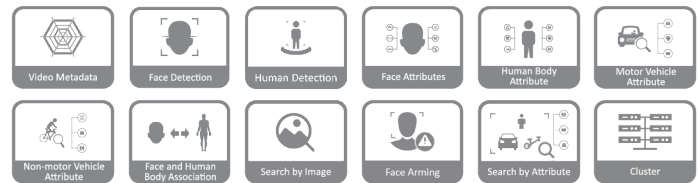
Non-motor Vehicle Detection

Detects non-motor vehicles by a wide range of attributes such as type and color. It can also detect the attributes of drivers such as gender, age, hair style, the color of their top clothes, whether they are wearing a hat and items belonging to them such as umbrellas, backpacks and handbags.

Pedestrian Detection

Detects pedestrians by a wide range of attributes such as gender, age, hair style, the color of their top and bottom clothes, whether they are wearing a hat and items belonging to them such as umbrellas, backpacks and handbags.

- Adopts advanced face deep learning algorithms and gives full play to GPU parallel computing. With its algorithms, the device has enhanced recognition capabilities and performs exceptionally well, raising the bar in the industry.
- Tesla T4 intelligence analysis card with strong computing power.
- Performs intelligent analysis and compares tens of millions of pieces of massive data from faces, vehicles and structured services.
- Arms the blocklist database which has millions of pieces of face data.
- A type of rack mount server with multiple built-in slots and modular replacement that assist with changing the hardware.
- The system has cluster deployment and supports enhancing the performance of clusters when servers are added based on the video cloud distributed architecture.
- Supports algorithm storehouse.

| Video Metadata | Face Detection | Human Detection | Face Attributes | Human Body Attribute | Motor Vehicle Attribute |
| Non-motor Vehicle Attribute | Face and Human Body Association | Search by Image | Face Arming | Search by Attribute | Cluster |

Face Detection

Detects and analyzes face image streams by gender, age, expression, glasses, mustache, face mask, opened and closed eyes, and opened and closed mouths.

Face Modeling

Supports extracting attributes from face images.

Search by Image

Images can be used to search for information, and the search results can be filtered by time and channel. The results are compared with data on humans, motor vehicles and non-motor vehicles in the database, and the matches are displayed based on their similarity level.

Face Arming

Compares the face snapshot against a designated face database to get information on the first person that exceeds the arming threshold.

Advanced Architecture

The system has clustered deployment and dynamic performance extension capabilities that are based on video cloud distributed architecture.

Scene

It's widely used for checkpoint, entrance and and other places that require video surveillance. It is suitable for a variety of scenes such as government, schools, airports, police stations, and more.

Technical Specification

System

Main Processor	Two 16 C/32 T X86 processors, 2.1 GHz
GPU	Supports Four NVIDIA TESLA T4 GPUs (the GPU card is optional, and the following functions are available with the GPU card and relevant software permission).
Operating System	CentOS Linux release 7.4.1708 (Core)
Memory	Eight 16 GB DDR4 memory modules with up to 24 slots
Disk	Five 3.5"4 TB HDD which can be expanded to maximum 32 TB (each HDD is 4T) with up to 8 slots. 7.2K RPM SATA 6 Gbps 512n 3.5"

Face Analytics

Face Detection	Detects and analyzes face image streams by gender, age, expression, glasses, mustache, face mask, opened and closed eyes, and opened and closed mouths.
Face Modeling	Supports extracting attributes from face images.
Face Arm	Compares the face snapshot against a designated face database to get information on the first person that exceeds the arming threshold.
History Alarm Records Query	Quickly search for history records on arming alarms to review information on alarms that were previously triggered.
Management of Registered Database	Manage and use multiple types of databases such as the blocklist database, allowlist database, and static database. You can add, delete and modify these databases and their members.
Search in Registered Database	Quickly search for registered database members by name, gender, date of birth and ID card number.
Search by Image in Registered Database	Images can be used to search for information. The results are compared with data on humans in the registered database, and the matches are displayed based on their similarity level.
Search in Snapshot Database	Conveniently search for history records of passing persons in the snapshot database.
Search by Image in Snapshot Database	Images can be used to search for information, and the search results can be filtered by time and channel. The results are compared with data on humans in the snapshot database, and the matches are displayed based on their similarity level.
1V1	Supports 1V1 face comparison, and returns similarity result.;One T4 card supports up to 75 times/s (only in the case of working with video cloud platform, and exclusive use of hardware resources of single server) The actual performance depends on the software that the server works with.
Cluster	Supports clusters (when it is set to work with the video cloud platform)
Image Stream Analysis Capability	One T4 card supports up to 200 face images/s. The actual performance depends on the software that the server works with.
Blocklist/Allowlist Database Arm	When a single server perform arming with CPU hardware, it supports blocklist/allowlist database with 2 million data and can real-time alarm of 100 face features/s (The total number of databases in the video cloud system≤200, the total number of members≤2 million, the deployment threshold ≥80%, and exclusive use of hardware resources) The actual performance depends on the software that the server works with.
Search by Image	Up to 100 million face data (30 million in registered database and 70 million in snapshot database by default) Search by image and respond in seconds (only in the case of working with video cloud platform, and exclusive use of hardware resources of single server) The actual performance depends on the software that the server works with.

Vehicle Analytics

Vehicle Recognition Mode	Recognizes the front and back of vehicles (supports recognition of license plates from Brazil, and configuring license plate recognition for other countries).
License Plate Color Recognition	White, black, yellow, blue, and green
Vehicle Color Recognition	Recognizes a variety of colors such as white, orange, pink, black, red, yellow, gray, blue, green, silver, brown and purple
Vehicle Type Recognition	Supports large bus, heavy truck, medium truck, sedan, van, truck, medium bus, SUV, MPV and pickup
Vehicle Attributes Recognition	Recognizes vehicle attributes such as tissue boxes, sunshields, pendants, perfume, cards and permits.
Safe Driving Behavior Detection	For drivers, it detects when they are not wearing their seatbelt, calling while driving and smoking. For co-drivers, it detects when they are not wearing their seatbelt and carrying a baby.
Target Detection	Supports vehicle recognition of incomplete snapshot
Image Stream Analysis Capability	One T4 card supports up to 3 million image/day (pixel from 2 MP to 9 MP) The actual performance depends on the software that the server works with.
Vehicle Brand/Logo Recognition	147 kinds
License Plate Recognition	License plate recognition with a minimum of 50 x 13 pixels is supported. The actual performance depends on the software that the server works with.
License Plate Recognition Rate	With normal light in the day and normal fill light at night, resolution ≥120 × 120, clear, distinguishable license plate. License plate accuracy: ≥96%.
Vehicle Type Recognition Rate	With normal light in the day and normal fill light at night, resolution ≥240 × 240, clear, distinguishable vehicles. Vehicle type accuracy: ≥92%.
Vehicle Color Recognition Rate	With normal light in the day and normal fill light at night, resolution ≥240 × 240, clear, distinguishable vehicles. Vehicle color accuracy: ≥95%.
Safety Belts Recognition Rate	≥85% (vehicle glass is clear) The actual performance depends on the software that the server works with.
Recognition Rate of Driver and Passenger Phone Calling	≥80% (vehicle glass is clear) The actual performance depends on the software that the server works with.
Search by Vehicle Picture	Images can be used to search for information, and the search results can be filtered by time and channel. The results are compared with data on motor vehicles in the database, and the matches are displayed based on their similarity level.

Search by Vehicle Picture Performance

Vehicle Search	One server supports up to 40 million data in snapshot database, searching by image and responding in seconds(only in the case of working with video cloud platform, and exclusive use of hardware resources of single server) The actual performance depends on the software that the server works with.

Metadata Analytics

Target Classification	Classify targets including face, body, motor vehicles and non-motor vehicles. Generate intelligent structured analysis on the live video, history video (when using with the platform), and the video files that were uploaded offline, and then extract structured information on the moving targets. (for face, only image can be viewed without structured analysis).

Motor Vehicle Detection	Detects motor vehicles by a wide range of attributes such as type, color, brand and plate number(supports recognition of license plates from Brazil, and configuring license plate recognition for other countries). Detects sunshield, not wearing seatbelt, calling, ornament (pendant and tissue box).	Pedestrian Recognition Accuracy	With normal light in the day and normal fill light at night, resolution ≥80×160, clear and distinguishable pedestrians: Gender accuracy: ≥90%; Hair style accuracy: ≥90%; Clothes style and color accuracy: ≥90%; Wearing accuracy: ≥90%; Belongings accuracy: ≥90%. The actual performance depends on the software that the server works with.
Non-motor Vehicle Detection	Detects pedestrians by a wide range of attributes such as gender, age, hair style, their top and bottom clothes and color, non-motor vehicle type and color wearing a hat, hat color, umbrella (canopy), umbrella (canopy) color, bag, bag color, shoe type and color, vest, mask color, raincoat, rearview mirror, truck, basket and direction.	Recognition Accuracy of Non-motor Vehicle	With normal light in the day and normal fill light at night, resolution ≥80×160, clear and distinguishable non-motor vehicles: Gender accuracy: ≥90%; Hair style accuracy: ≥90%; Clothes style and color accuracy: ≥90%; Wearing accuracy: ≥90%; Belongings accuracy: ≥90%; Non-motor vehicle type accuracy: ≥90%. The actual performance depends on the software that the server works with.
Pedestrian Detection	Detects pedestrians by a wide range of attributes such as gender, age, hair style, their top and bottom clothes and color, wearing a hat, hat color, umbrella, umbrella color, bag, bag color, shoe type and color, vest, mask color, raincoat, cart, whether they are riding, and direction.	Vehicle Recognition Accuracy	With normal light in the day and normal fill light at night, resolution ≥240×240, clear, distinguishable motor vehicles: Motor vehicle type accuracy: ≥92%; Motor vehicle color accuracy: ≥90%; Driver and passengers' safety belt accuracy: ≥85%; Driver and passengers' phone call accuracy: ≥80%; With normal light in the day and normal fill light at night, resolution width ≥120, clear, distinguishable number plate: plate accuracy: ≥96%; plate color accuracy: ≥90%. The actual performance depends on the software that the server works with.
Real-time Display	Displays the analysis results in real time, and display humans, motor vehicles and non-motor vehicles in real time with tracking boxes.		
Search by Attribute	Intelligent search of human, motor vehicles and non-motor vehicles by their attributes.		
Search by Image	Images can be used to search for information, and the search results can be filtered by time and channel. The results are compared with data on humans, motor vehicles and non-motor vehicles in the database, and the matches are displayed based on their similarity level.		
Video Recording Task	Generate intelligent structured analysis on history videos (when using with the platform), extract structured information on moving targets, and the video recording task can be accelerated automatically.		
Local Task	Generate a structured analysis of your uploaded local video files, and extract information on moving targets, and the local task can be accelerated automatically.		
Display Tracks on the Map	Yes (when using with the platform)		
Computing Node Cluster	Supports clusters (when it is set to work with the video cloud platform)		

Port

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Network Port	2 × 10000/1000 MB self-adaptive network ports
USB	2 × front USB3.0 ports and 3 × rear USB3.0 ports
VGA	2 × VGA ports
Others	1 × RJ-45 management network port

Metadata Analytics Performance

Intelligent Video Stream	Supports real-time display of structured intelligent video streaming, including target attributes, and displays up to 5 items at the same time. Pedestrians (age, gender, top clothes and color, hat, umbrella and bag), vehicle (model, brand, license plate and color)
Metadata Analytics Performance	One T4 card supports up to 32-channel real-time 1080p video analysis of moving target or 100 images/s (1080p) metadata analysis of target or 3 million images/day (1080p) structured analysis. The actual performance depends on the software that the server works with.
Search by Image Performance	One server supports up to 40 million data in snapshot database, searching by image and responding in seconds(only in the case of working with video cloud platform, and exclusive use of hardware resources of single server) The actual performance depends on the software that the server works with.
Detection Rate of Moving Target	With normal light in the day and normal fill light at night, resolution ≥40 × 80, clear, distinguishable pedestrians and non-motor vehicles: Detection rate of pedestrians: ≥95%; Detection rate of non-motor vehicles: ≥95%; With normal light in the day and normal fill light at night, resolution ≥120 × 120, clear, distinguishable motor vehicles: Detection rate of motor vehicles: ≥95%. The actual performance depends on the software that the server works with.

General

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Power Supply	100–127 V/200–240 V, 50/60 Hz, 10 A/5 A
Power Redundancy	Dual
Power Consumption	≤ 800 W
Operating Temperature	10°C to 35°C (50°F to 95°F)
Operating Humidity	35%–80% (RH), maximum relative humidity is 90%(RH) (40°C).
Storage Temperature	−40°C to 60°C (−40°F to 140°F)
Storage Humidity	20%–93% (RH)
Gross Weight	35 kg (77.16 lb)
Net Weight	27.5 kg (60.63 lb)
Product Dimensions	87.1 mm × 447.6 mm × 735.0 mm (3.43" × 17.62" × 28.94") (H × W × D)
Packaging Dimensions	273.0 mm × 754.0 mm × 1069.0 mm (10.74" × 29.68" × 42.09") (H × W × D)
Installation	Standard 19'' rack installation with guide rail
BTU	≤2729.7 Btu/h

Optional

Product Type	Hardware

Dimensions (mm [inch])

482.6 [19.00]

87.1 [3.43]

447.6 [17.62]

735.0 [28.94]

783.2 [30.83]

Panels

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2
3
4

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7
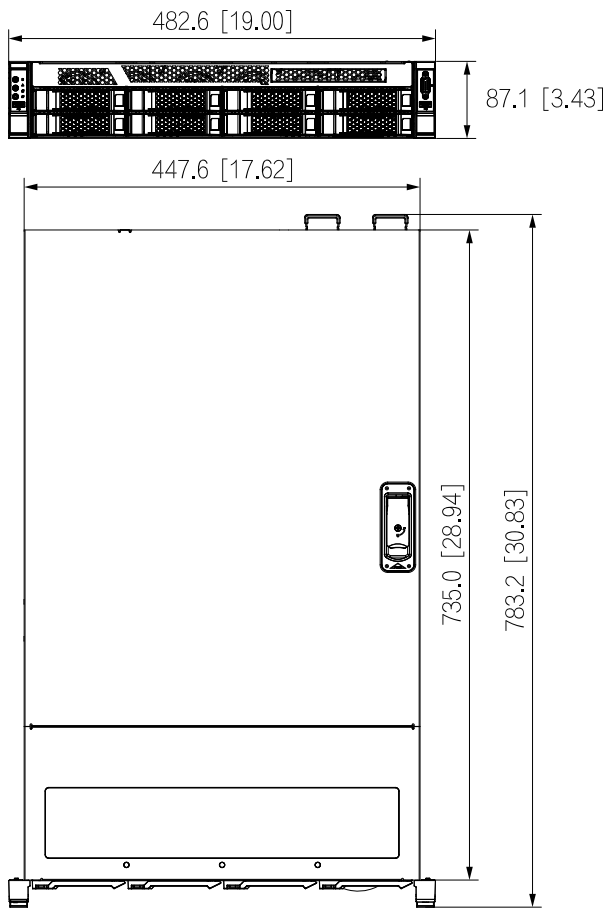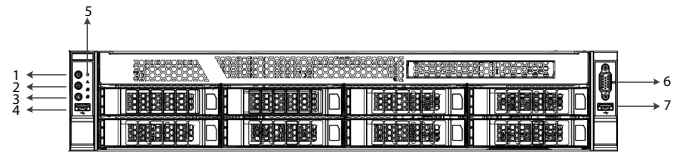
1 Power Button
2 ID Button
3 Reset Button
4 USB3.0 Port

5 HDD/System Status/LAN1/LAN2 LED
6 VGA Port
7 USB3.0 Port

1　　2　　3　4　　5　6　　7　　8
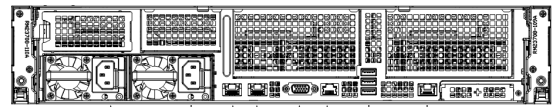
1 Power Input1
2 Power Input2
3 LAN Port1
4 LAN Port2

5 VGA Port
6 Serial Port
7 3*USB3.0 Port
8 Management Port