

Product Manual

3D AI People Counter

HX-CCD21 (AI Version)

AI

POE

AI



IN +1

OUT +1

POE

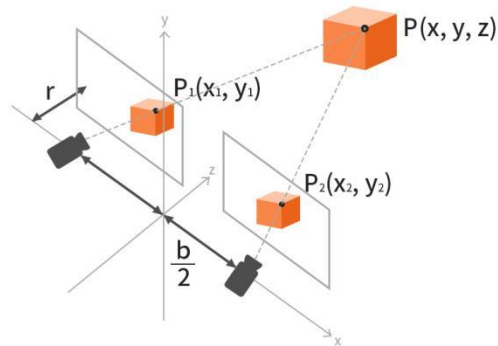


Core Technology

3D binocular vision AI algorithm

Technical principle

1. Bionic mechanism: simulate human binocular vision, capture environmental information synchronously through dual lenses, construct three-dimensional coordinates based on triangulation, and accurately obtain object size and spatial position;
2. System composition: dual-lens module + image acquisition device, coordinate mapping is achieved through calibration parameters.

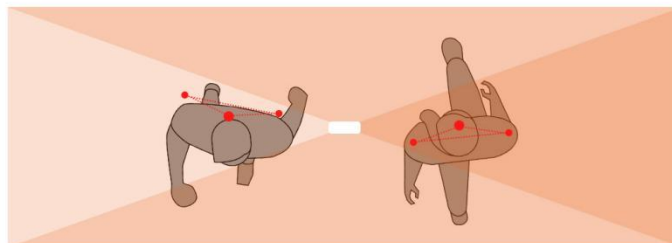


Technical characteristics

1. Real-time three-dimensional reconstruction: built-in depth calculation unit (1280×800@25fps), human body detection/tracking/height measurement based on three-dimensional data;
2. Intelligent allocation of computing power: integrated 2TOPS NPU+image accelerator, passenger flow calculation does not occupy the main computing power, and AI computing power is all used for core algorithms;
3. Real-time attribute analysis: age/gender recognition;
4. Real-time employee analysis: work badge recognition (clerk/customer distinction);
5. Future expansion: based on REID feature extraction and matching, identify repeated in and out personnel to make passenger flow more accurate.

Technical highlights

1. Precise adaptation: 3D data modeling improves the recognition accuracy of complex scenes (such as the error of distinguishing children/adults <2cm);
2. Edge computing: local processing of the entire process, without the need for cloud server support;
3. Flexible expansion: supports rapid iteration of object detection models to meet customized needs.



Core Highlights

The 3D AI people counter (AI version) uses high-precision 3D imaging technology and can count the number of people in real time with an accuracy rate of up to 99%. The built-in AI algorithm can identify the number of people entering, exiting, passing, staying, and returning, as well as gender, age (<10 years old, 10-16 years old, 17-30 years old, 31-45 years old, 46-60 years old, >60 years old) and other data collection to generate richer crowd portraits and conduct deeper data analysis. It can accurately filter employee entry and exit data through employee badge recognition, and can also support REID deduplication function to avoid data interference. It can be widely used in shopping malls, retail stores, public transportation buses, scenic spots, libraries, museums, restaurants, factory supermarkets, parks, buildings, toilets, etc.



Privacy Protection

This 3D AI people counter, relying on stereo vision technology, is deployed in public places, focusing on accurate passenger flow statistics, and providing data support for efficient operation of the venue.

The device adheres to the bottom line of privacy protection, does not collect face recognition data, and only collects anonymous passenger flow data, such as personnel flow trajectory, length of stay, etc., for passenger flow statistics, and does not involve any personal information, which complies with GDPR.



Product Features



Real-time and Accurate Statistics

Real-time and accurate human body recognition with an accuracy rate of up to 99%, accurately filtering out children and other large objects.



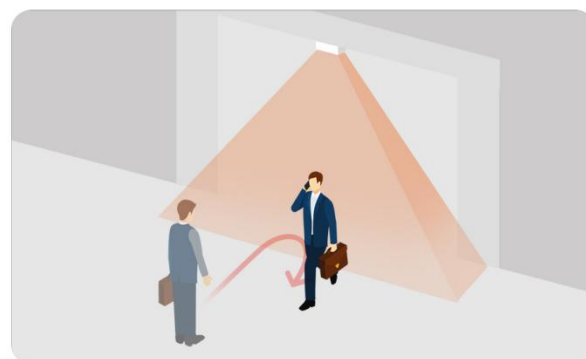
REID Deduplication

Through the deep learning model of human features, duplicate counts of the same person entering, exiting or staying multiple times in a day can be removed.



Dwell Time Statistics

Based on the REID deduplication function, the "total stay time" and "average stay time" of customers in the store can be recorded.



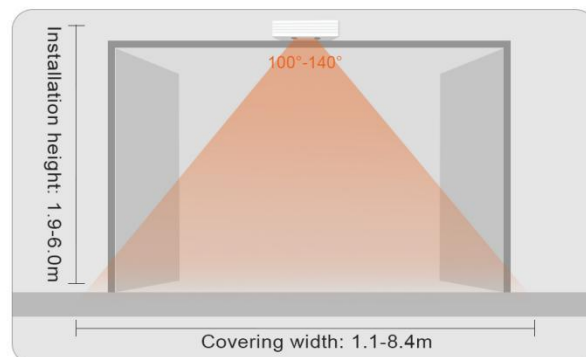
Reentry Statistics

Store personnel who enter the device detection area but do not completely leave the store and then return to the store will be identified as "returning".



High-performance Computing Storage

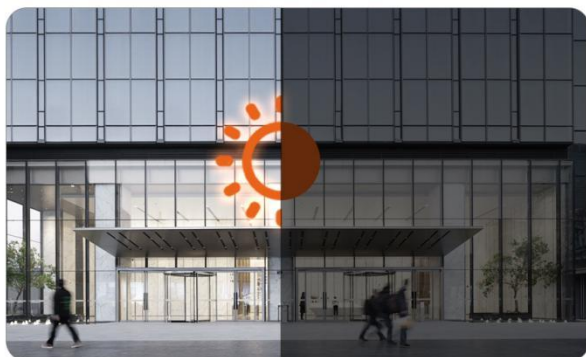
Intelligent dual-core architecture, 20% higher energy efficiency, simultaneous multi-modal data processing. 2 TOPS heterogeneous computing power, millisecond-level response for AI reasoning. 1GB LPDDR4 cache, 50% higher data throughput.



Automatic Zoom, Wide Area Coverage

Supporting software automatic zoom, the device supports an installation height range of 1.9-6m, a coverage range of 1.1-8.4m, and can adapt to different installation environments.

Product Features



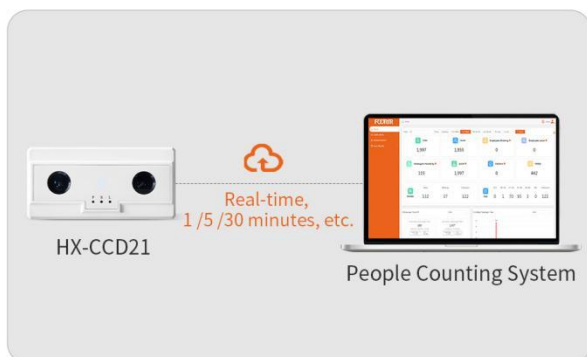
Strong Environmental Adaptability

Adapt to scenes with strong outdoor sunlight, scenes with decorative lights at the door, and scenes with dim light and darkness.



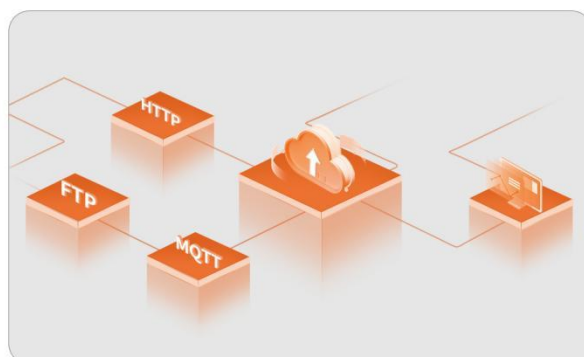
High-definition Image and Video Acquisition

Equipped with a 2-megapixel imaging system, it can acquire high-definition, color images and video data.



Data Upload Timeliness

The data upload server time can be customized to support real-time, 1 minute, 5 minutes, 30 minutes, etc.



Multi-protocol Support

The device provides HTTP POST/HTTPS POST/FTP/SFTP/MQTT protocol data transmission and supports secondary development data docking of the device.



Network Smart Devices

Supports local computing, no local server required, supports Flash offline storage, supports continued transmission after network disconnection, supports POE power supply, and supports wired/wireless connection.



Rich Open Interfaces

The device has rich local open application interfaces and RS-485 expansion support, allowing developers to integrate and develop flexibly and quickly.

Functional Mode

Wheelchair Mode

The number of people in wheelchairs entering and exiting can be individually identified and a signal given.



Child Mode

After setting the height of children, people who are lower than the height will be recognized as children.



Control Mode

equipment works with relay, control a variety of electrical appliances.



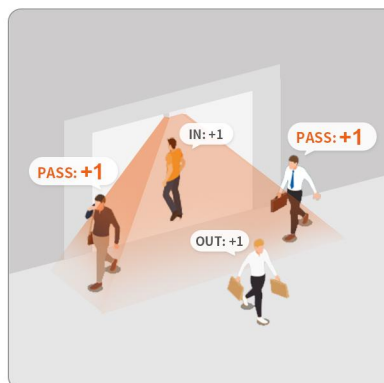
Data Display Mode

The device and the host are matched to visualize the data.



Channel Mode

which can detect the number of people passing by the door and the number of people entering the store.

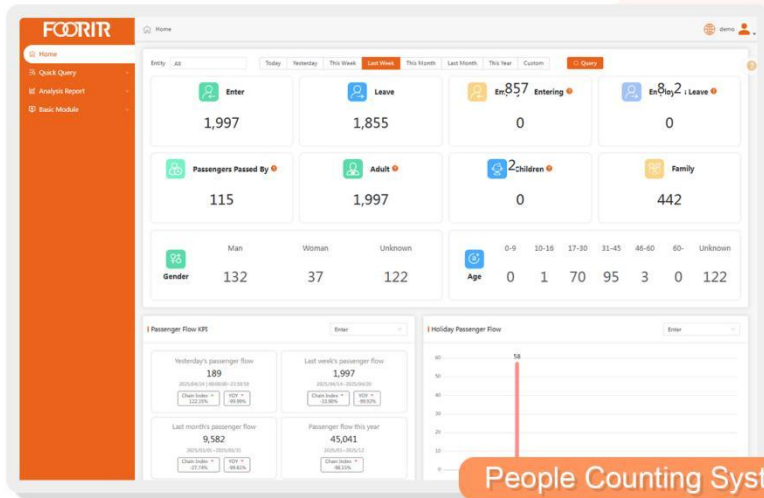


Standalone Mode

The local data of the device can be stored for 90 days, can be exported, and can be used without network.



Data Display



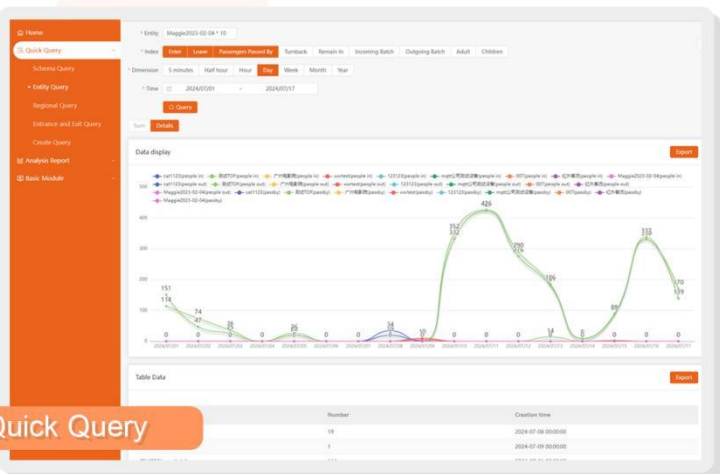
People Counting System

3D AI people counter data is uploaded to the cloud platform for visual management. The cloud platform provides users with real-time quick query and multi-dimensional analysis reports to help make accurate operational decisions.

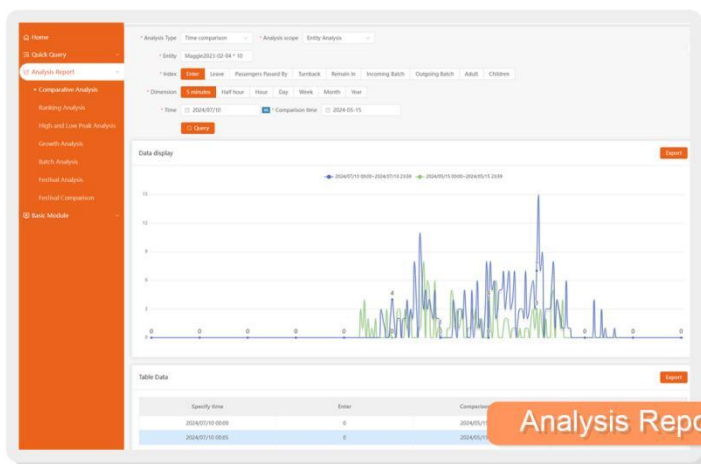
The query indicators include the number of people entering, leaving, passed by, turning back, adult and children, Employee in and out, gender, age, incoming batch, outgoing batch, the number of families and individuals, etc.

Quick query includes schema query, entity query, regional query, entrance and exit query, and users can also create custom queries.

The query dimensions can be selected as 5 minutes, half an hour, hour, day, week, month, year, and can be displayed according to user needs.



Quick Query



Analysis Report

The analysis report covers comparison analysis, ranking analysis, high and low peak analysis, growth analysis, batch analysis, festival analysis and festival comparison, presenting the analyzed passenger flow data in multiple dimensions.

Applicable Scenarios

The device acquires 3D depth information in real time through binocular stereo vision AI sensors, identifies head and shoulder features in complex scenes based on head and shoulder feature algorithms, and achieves accurate passenger flow statistics through human body tracking algorithms. It is widely applicable to shopping malls, retail stores, buses, scenic spots, libraries, museums, restaurants, factories, supermarkets, parks, buildings, smart toilets, exhibition halls, gyms, etc.



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