

TraceVision

Highly Advanced Personnel Trajectory, Tracing, and Tracking System.

Powered by Artificial Intelligence, Driven by Innovation.



Common Challenges

Organizational Pain Points

One of the biggest headaches faced by organizations is keeping track of all personnel on their premises.

There have been several “solutions”, from biometric access control, to security patrol, but none of them are able to fulfill every one of an organization’s security needs.

Finding out accurate number of people at any location on premise real-time.

Accurately identify every person, including their roles, purpose of visit, and access permissions.

Find out the exact route each person has taken through your premises, including timestamp.

Quickly find out which areas experience high volumes of traffic at certain times of the day.

Ensure security personnel complete their patrol rounds, at the right time and at the right locations.

Personnel Count



Identify People



Paths History



Traffic Heatmap



Security Monitoring



Challenges

Introduction

TraceVision is a data analysis platform based on accurate identification of persons on premise, precise positioning of individuals, and detailed records of each person's movement routes.

The structured data record of an individual's behavior is built up by collecting multi-dimensional data. In order to do this, the system deploys a cluster-type high-performance video analysis configuration, which records a every person's movement in its entirety, within a defined physical setting.

TraceVision is different from other products which utilizes facial recognition technology at camera access points to capture images, and then attempts to connect the various access times for analysis. A single system can monitor your entire premise, including open spaces like halls, without limiting access or requiring your visitors to scan their faces.



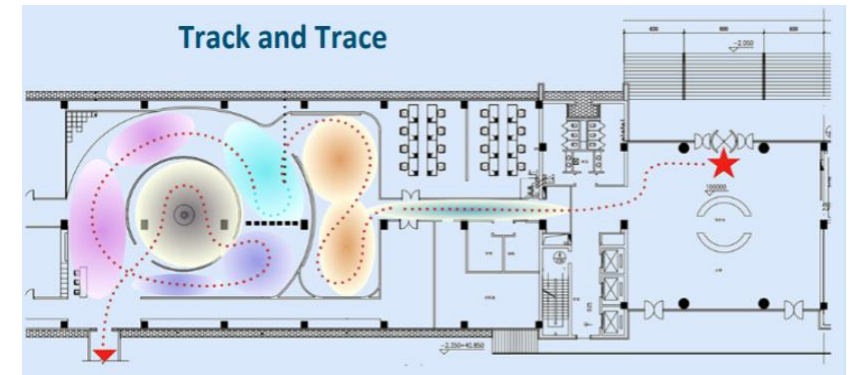
Full-Field Personnel Route Tracking

Record all the whereabouts of staff, customers, visitors, suspicious persons, and quickly trace them real-time.



Abnormality Analysis and Warning

Abstract abnormal events (such as entering unauthorized areas, staying overtime, etc) based on route data, and provide real-time warning.



Detailed Report Analysis

Analyze from different dimensions, provide real-time statistical analysis of reports
Report is customizable to be able to detect and analyze based on specific requirements

Scenario: Trajectory Tracking

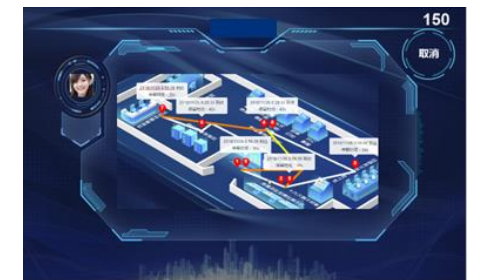
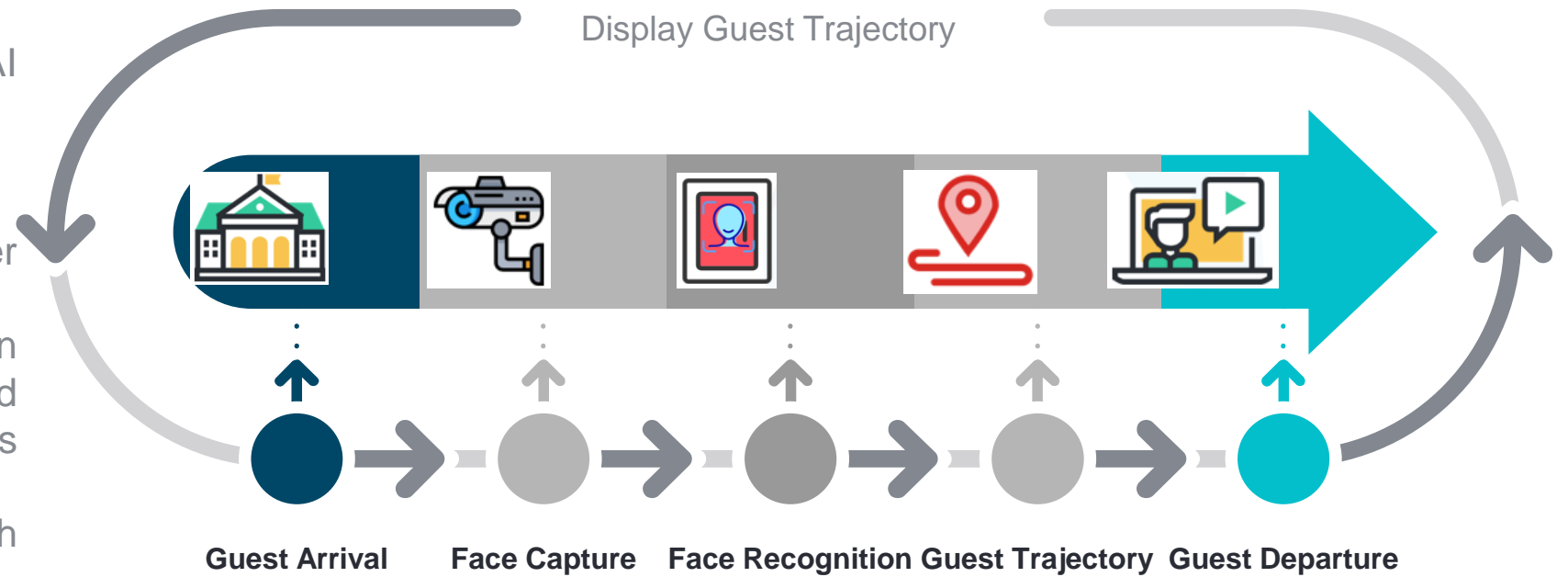
How TraceVision Works

1. Guest arrival at exhibition hall
2. Face of guest is captured using AI camera
3. Facial recognition is performed using the captured image
4. Captured image is stored in a server and appears on software interface
5. Guest trajectory is tracked based on face matching (1:N) algorithm and able to know where and who he is with how much time spent etc.
6. Personalized guest greetings at each of the designed area
7. Data is stored for trajectory analysis

System is able to integrate with visitor registration/ticketing systems, multimedia content delivery channels (i.e. digital screens), web applications.

Trajectory Tracking in Exhibition Hall

Display Guest Trajectory



System Functions

Area Access Records

Record each person's entry and exit time and area where each person appears

Automatic File Creation

Automatically create files for all personnel and able to recognize repeat visitors and VIPs.

Duration of Stay

Records how long each person stays in an area and generates heat map analysis



Facial Recognition

Personnel identification within the monitoring area. **Able to identify non-front facing customers.**

Crowd Density

Real-time or specific time interval statistics of the actual number of people entering the monitoring area. Able to give analytics of single cus

Trajectory Display

Record the trajectory of the personnel in the monitoring area and display it in real time

Technical Specifications

	Trace Vision product
Camera	AI box camera HD lens AI hemisphere camera
Storage and Network	NVR recorder Hard disk 10G optical module Router Access switch Core switch Optical module
Software and Algorithm	BI system Facial recognition
Servers	Application server Analysis server

System functions

	Function	Description
Business functions	Face enrolment	Support single and batch/ stranger automatic file creation
	Basic search	Retrieve face recognition results and snapshot results
	Database query	Retrieve registered people
	Group management	Group existing people
	Camera management	Camera corresponding area name, IP address, serial number, port, camera type
Smart notification	Welcome guests or alarm	Customize different messages for VIPs, repeated visitors and first time visitors
Data Analysis	Age group/other types of groups	Show the proportion of different age groups within a week Show the proportion of different people (grouped)
	Gender	Real-time display of personnel presence based on gender
	Visitor Gender Statistics	Show the statistics of different people's gender within a week
	Passenger flow statistics	Perform statistical analysis based on the attendance
	Overall area statistics	Perform statistical analysis in each area
	Area/Person Density Heat Map	Count the personnel density in different areas
Trajectory analysis	Dynamic track display	Push the latest track to push and draw dynamic track
	Query trajectory according to face	Query the corresponding historical trajectory through the face and draw it dynamically
	Query recent track	According to the selected corresponding personnel, display the corresponding historical trajectory and draw dynamically (support the last 20)
	Visitor arrival timing	Show visit/arrival time in an area
	Length of stay	Show time spent in an area
System basic management functions	User management	Administrators manage effective users
	Role management	The system can operate on role management
	Menu options management	Super administrator can manage the menu options available to users
	Function management	Super administrator can manage the functions available to users

Technical specifications – (1)

■ Hardware – Camera and Switches

	Part	Model no.	Configuration
Camera	AI Box Camera	GDZS-IC100-AI47	<p>Embedded deep learning algorithm</p> <p>Supports two smart resource mode switching: mixed target detection (default), face capture</p> <p>Supports 2560 × 1440 @ 30fps real-time frame rate, the image is smoother</p> <p>Supports 120dB wide dynamic</p> <p>Anti-shake, clarity of image guaranteed even in foggy conditions</p> <p>Supports ONVIF (profile S / profile G), ISAPI, GB / T28181, E-HOME and video library access</p> <p>Supports five-channel stream technology, dual-channel high-definition, support 20-channel simultaneous streaming</p>
	HD Lens	HV1140D-8MPIR	8-MP HD lens with automatic aperture and manual zoom settings
	AI dome-shaped Camera	GDZS-IC100-IZ2	<p>Minimum illumination: 0.005Lux @ (F1.2, AGC ON), 0 Lux with IR</p> <p>Supports slow shutter speeds</p> <p>Lens interface type: M12</p> <p>Lens: 6mm, horizontal field of view 79 °</p> <p>Sensor type: 1 / 2.7 "Progressive Scan CMOS</p> <p>Shutter: 1/3 second to 1 / 100,000 second</p> <p>Angle adjustment: horizontal: 0 ° ~ 360 °; vertical: 0 ° ~ 75 °; rotation: 0 ° ~ 360 °</p> <p>Day and night conversion mode: ICR infrared filter</p> <p>Wide dynamic range: 120dB</p> <p>Digital noise reduction: 3D digital noise reduction</p>
Switch	POE Switch		100M unmanaged POE switch

Technical specifications – (2)

■ Software and Algorithm

	System	Name	Description
Software and algorithm	Customer Identification System	GRG Customer Identification System	Background management and display system
	Image Terminal Processing Program	GRG Image Terminal Processing Program	Process camera image and video terminal program.
	Facial recognition	Aibee Facial Recognition Algorithm v1.3	Facial Recognition Algorithm

■ Server

	Configuration	Description
Application server/ Database server	CPU: E5-2643 v4 (6-Core)G Memory:64G Hard disk: 512G SSD+4T HDD Operating System: CentOS 7.5	Deploy customer identification system
Analysis Server	CPU: Intel® Xeon® Gold 6136 (12核) GPU: Tesla T4 / Tesla P4 Memory:32G Hard disk: 960G SSD Operating System: CentOS 7.5	Supports 10-50W bottom library 30 concurrent analyses

Function coverage

Functions	Description
Trajectory integrity	Obtain location information through 3D modeling, the trajectory is relatively complete, and each location is accurate
Scene coverage	Using multiple cameras to form a network, the shooting range completely covers the designated area, and there is basically no blind spot.
Customer information notes	The customer's location information and identity information are bound in real time, and both can be obtained at the same time.
Detection and tracking technology	Based on face detection, dressing, posture and other composite detection technologies, no additional cooperation from customers is required. Able to identify non-front facing customers.
Accuracy of trajectory	Based on the positioning record of not less than 10 fps (more than 6 per second), accurately track the movement trajectory of the tracking personnel
Precision of positioning	Using the spatial projection rule to calculate the current 3D position information of the customers present, the position detection rate is higher than 90%, with little error of not more than 50 cm.
Real time nature	Delay of 5-10 s

Contact us at
hello@innowave.com.sg
Thank You

