What is Recognitive Technology?

Since releasing the industry's first truly innovative recognitive camera in 2014, Kedacom continues to accelerate the development of big data applications by challenging traditional video surveillance technology. In 2015, Kedacom will unveil further improved recognitive cameras which will enhance customers' intelligent front-end system implementation in different scenarios. In the meantime, Kedacom stands ready to push a more comprehensive solution over the cloud storage infrastructure together with big data applications to help customers deploy end-to-end and fully intelligent video-to-data-to-video surveillance systems.

We are now globally promoting these technologies and products, through standardization of products using a convenient and collaborative development model that allows global partners to achieve rapid integration of intelligent technology for end customers' innovative projects. Some such projects include Safe City, intelligent transportation, Smart Safety and Security, smart retail shops and more solutions.

In a traditional video surveillance system, a camera can capture video streams or snapshots which are transmitted to a backend storage device. The current standard of security surveillance includes the retrieval and analysis of these videos and pictures from back-end storage devices.

The evolution of 'smart' video surveillance systems from traditional surveillance systems encompasses image recognition technology that allows features such as tripwire drawing and warning area masking and can be set easily using the camera' s image settings. By discerning the target's movement and its breach of virtual line on entering & exiting the warning area it generates an alarm and collates these event-triggered images in the background. The security manager / operator is alerted of the triggered alarm so he / she can further assess the intrusion to determine its nature and take appropriate action.

However, there are some technical limitations to such smart technology. Using this method only partial image pixel changes are recognized by the camera. And If, for instance, parameters like light intensity, image color or the target size changes, multiple targets appear on-screen simultaneously and this can raise multiple fault alarms unnecessarily.

In such a case Recognitive Technology, compared with Smart Technology, is more advanced in terms of functions and capability. Recognitive technology uses a more sophisticated image recognition algorithm, integrating high-performance processing chipset, capable of identifying and classifying an image. Recognitive technology can not only identify the moving object and the intrusion event, its core capacity is also to accurately identify multiple moving targets, the ability to trace target movement and determine its speed, direction and characteristics like size, color and type.

Framework	Conventional Image capture + Video Encoding	Smart Technology Image capture + Video Encoding + Smart simple Technology	Recognitive Technology Image capture + Video Encoding + Higher Recognitive Technology
Processor	Codec	Codec + Lower CPU	Codec + Higher CPU
Capture Content	Video, Images	Video, Images, Alarms	Video, Images, Alarms, Target Track, Speed, Direction, Size, Colors, Type
Application	Conventional Security	Enhanced Alarmed Security	Intelligent Security & Smart Application Management

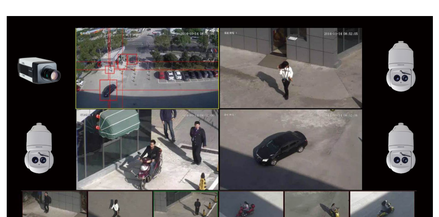
Kedacom Recognitive Technology Products

1. Intelligent Tracking System

Intelligent Tracking System comprises a box-type and one or more PTZ camera/s to surveil large outdoor areas. A single system can cover an area of up to 10,000 square meters. The system can identify many kinds of moving targets. It can acquire multiple targets simultaneously, and automatically controls PTZ dome camera/s to close-up on and track each target thus conducting each target's recognitive analysis. The system can classify a target's type, moving speed, body color, direction of movement, and other features. The Intelligent Tracking System can further record moving targets in panoramic mode within a wide area, record close-up videos, snapshots, and provide access to relevant characteristics of each individual target.

Features:

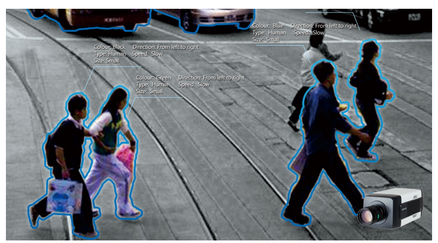
- PTZ Tracking for Large Open Spaces
- High Accuracy Multi Target Acquisition
- Creates Virtual Fencing Zones
- Acquires 60 moving targets at once
- 10,000 Sq/M Coverage
- High-speed target switching
- Auto snapshot
- 3 Moving Objects Tracking Simultaneously



2. The Recognitive Camera

The Recognitive Camera consists of an embedded high-end chipset and analytic algorithm into its chassis. The camera recognizes various kinds of moving objects within a surveilled area; multiple moving targets can be locked simultaneously and analyzed. The system differentiates people from objects, determines the target's speed, color, direction of movement, and other characteristics.

Recognitive Camera can deliver 3 types of streams to the backend storage device - live video, snapshot photos, and label text data which are generated by the camera. The information is categorized and its features are indexed together with live video data across backend storage infrastructure which makes cross-reference research possible and also allows users to quickly pinpoint the target within raw footage. The recognitive camera can be used across a wide variety of applications and business operations.



- Object Recognition Algorithm Integrated Within Camera
- Auto Snapshot on Every Moving Object
- Grab the Characteristics of Every Moving Object (Type, Colour, Size, Direction, and Speed)
- SDK Supported (For Application Development Partner)
- Additional Version: Vendor Development Version (Hardware and basic SDK provided. Vendors can integrate their own analytics algorithms inside camera.)

3. Human Recognitive Camera (overseas version will be released soon)

Human Recognitive Camera is equipped with an embedded high-end chipset, advanced professional recognitive algorithm and preloaded software. The camera can identify and classify various types of people entering the surveilled region. This Human Recognitive Camera can capture and recognise not only the facial images, but also simultaneously captures and recognises people by their facial image and body profile. Going beyond facial image capture, this recognitive camera also captures a person's rear profile accurately including head and body contours. The camera can also determine a human subject's moving direction, speed and other characteristics.

Features:

- Human Recognition Algorithm Integrated into Camera
- Auto Snapshot Acquired on Every Moving Human
- Auto Selection of the Best Facial Position
- Grabs Characteristics of Moving Person (Direction, Speed)
- Bidirectional People Counting
- SDK Supported (For Application Development Partner)

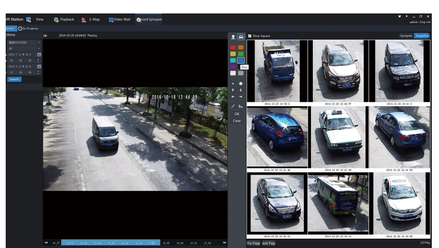
4. Intelligent NVR

Intelligent NVR combines Smart Video Synopsis and Recognitive analytic algorithm features. Video Synopsis function compresses video data into brief video clips, and automatically extracts photos of moving objects with reference to their color, size, direction, speed and other characteristics. Users can browse video clips of moving target and using snapshots and defined characteristics narrow down their search to quickly find video clips depicting target. Intelligent NVR revolutionises traditional video retrieval using numerous target characteristic metrics, style filtering and recording timeframe. This analytics feature will help customers reduce manpower usage and increase surveillance and organisational efficiency.

This NVR supports any standard ONVIF camera and thus is interoperable with other major camera brands as well. Encompassing modular architecture, this professional NVR is further capable to provide 64 channels and power redundancy making it most preferred for project applications for its flexibility, reliability and robustness.

Features:

- Integrated Video Summary Algorithm built-in to NVR
- Compresses Recorded Video to create Video Summary
- Grabs Snapshot of Every Moving Object
- Obtains the Characteristics of Every Moving Object (Type, Colour, Size, Direction, Speed)
- Fast Searching for Targets by Relevant Characteristics



Integration into Your System

1. Intelligent Tracking System

1) Intelligent Tracking System can be directly connected to Kedacom NVR.

2) Intelligent Tracking System provides SDK, access to third-party NVR / VMS system.

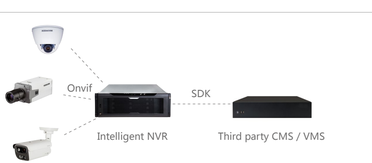
2. Recognitive Camera / Human Recognitive Camera

1) Recognitive Camera / Human Recognitive Camera provides SDK, access to third-party NVR / VMS system.

2) Vendor Development Version (Hardware and basic SDK provided, vendors can integrate their own analytics algorithm into the camera).

3. Intelligent NVR

Standard ONVIF-compliant camera can be directly accessed by the Intelligent NVR, the latter's SDK is also available to third party CMS / VMS system integrators.



Case Studies

1. Intelligent Tracking System on the Road of Israel

In Israel, we have a vibrant client base. Our Intelligent Tracking System is deployed in strategic locations there to monitor remote roads passing through both urban and suburban areas. This increases vigilance against potentially hazardous events such as a person who may pose a threat to passing vehicles.

By utilising the Intelligent Tracking System, authorities can surveil a large public area 24 hours a day. With its advance features, the System can simultaneously track vehicles and any suspicious persons by the roadside and capture critical live video streams and snapshots and make it possible to preempt against any malicious activities.

2. Intelligent Tracking System Applied to a Border Sea Port

A border seaport has been deployed with Kedacom's Intelligent Tracking System. The System automatically tracks every incoming and outgoing seafaring vessel together with all dock workers and as well as others moving on the dock.

It concurrently displays and records live videos and snapshots of people, vehicles and boats together with the target's essential characteristics such as colour, moving direction, speed and other key characteristics.

Thereafter, it transmits all recorded data to the storage centre. All videos are embedded with unique identifiers and indexed using snapshots peculiar to them. Using up to date technology the videos are stored safely with minimal space, and capable of being retrieved long after the event has lapsed.

3. Recognitive Camera Applied to a Safe City Plan

Kedacom's Recognitive Camera has been successfully used for a Safe City project thereby realising its analytics capabilities. In many Chinese cities, Recognitive Cameras are installed at every major road intersection and carry out the job to record and transmit videos and related data of passing vehicles and people.

By using the camera's built-in intelligence algorithm, each captured video stream possesses essential characteristics information about tracked subjects and is automatically indexed using a snapshot from within the video and is transmitted to a central storage platform.

On the central storage platform, a cloud-based Kedacom Big Data application can quickly locate a target's video from within massive video data sets. The System can geotag critical occurrences and retrieve search results based on image recognition algorithms to deliver multi-location results using natural language semantics for characteristics such as human facial features, back and side body features, clothing colour, direction of movement, speed and vehicle type.

The Kedacom Recognitive Camera applied in video data based environments is a paradigm shift from traditional video retrieval and dramatically enhances the usability and efficiency of our systems.

4. Intelligent NVR in a Factory

A variety of 50 Kedacom IP Cameras have been deployed in a manufacturing plant with 10,000 square meters of floor space. The System also consists of a Kedacom Intelligent NVR for intelligent video storage.

In case of an illegal parameter breach or theft at the manufacturing plant, the Intelligent NVR's video summary capability allows it to condense 8 hours of recorded video footage within a 5-minute timeframe. It, then, also grabs all photos of the facility's staff for cross-comparison while extracting the target's key characteristics information.

This process does not require security personnel to screen the video record for a long time using the Intelligent NVR, thus Kedacom's technology is helping this manufacturing plant to achieve efficiency in facility monitoring and anomalous event analysis and target traceability.

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