Video Analytics – A New Standard

UDP's embedded intelligent Video Analytics software is fast becoming the standard for all surveillance and security systems.

When combined with **UDP's comprehensive range of IP standard, Megapixel and HD cameras, IP encoders and compression cards** Video Analytics provides the most comprehensive surveillance coverage to combat today's increasing security risks.

The system adds real value to any CCTV installation in a simple and cost effective manner through use of its powerful intuitive tracking engine.

UDP Technology

Clear Sight, Clearer Insight

This **overview** of the Video Analytics system – VCAsys – will explain the various functions of the system, its attributes, benefits and features and how it operates to create a total surveillance system. More detailed information about each of the functions will be found in the relevant Application Note.

Benefits

The system offers the following overall benefits:

- High quality tracking engine
- Quick and easy to use – intuitive patented 3D graphical interface
- No algorithm parameters
- Cost-effectiveness

Tracker

This high-end tracking engine, which is the basis of the system, offers a wide variety of intuitive, intelligent functions. When incorporated into the various applications, they enable one of the most sophisticated Video Analytics packages available:

- Tracks up to 100 targets simultaneously.
- Up to 40 general purpose, user-defined, polygonal detection zones
- Camera shake cancellation – tracker works even if the camera is on a swaying pole
- Tracks objects when they stop or move very slowly
- Continues to track objects which pass each other, ensuring that the trail is continuous and unbroken
- Continues tracking when objects are partially or completely obscured temporarily
- Adjusts to image degradation caused by rain, fog, dirty camera lens and low sun position causing dazzle

UDP Technology

Clear Sight, Clearer Insight

Original Digital Video Solutions for Today's Tough Security Demands

Video Analytics – A New Standard

- Ignores changes in light due to clouds and switching on artificial lights or camera auto-iris operation
- Ignores repetitive movement – waving trees, rippling water
- Ignores cloud shadows passing across the ground
- Ignores video interference and missing video frames
- Does not trigger false alarms from PTZ camera movement
- Tracks objects on 100% of screen area (except in any non-detection zones as defined by the user)
- Includes on-screen Annotation Metadata – draws drawing bounding boxes and object trails.
- Highlights alarmed and non-alarmed objects in different colors
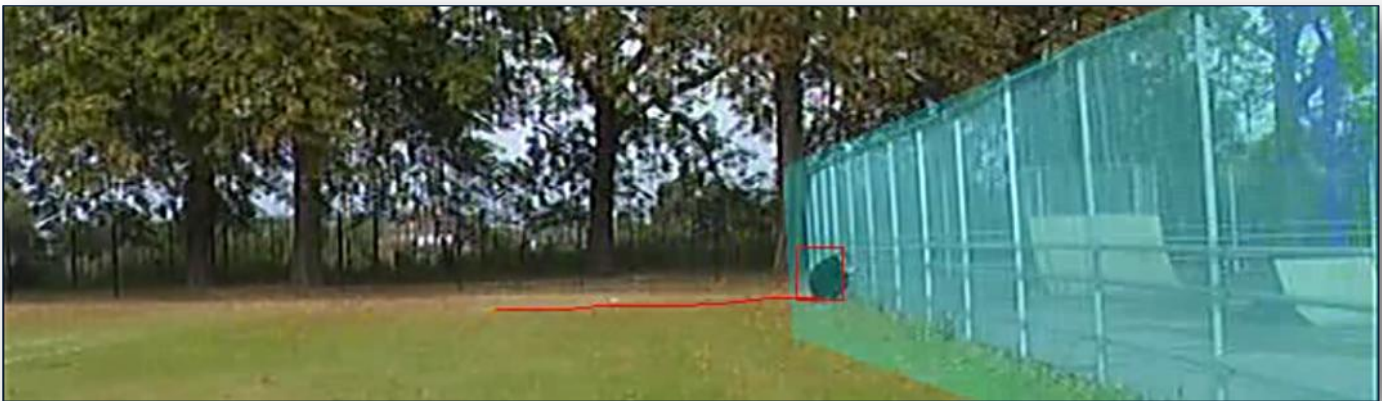
System Overview

UDP's Video Analytics package covers a range of CCTV platforms, including IP cameras, encoders and PC-based server solutions. It offers:

- Two levels of **functionality**: Primary, VCApresence – and more advanced analytics, VCAsurveillance
- Three **platform-based packages**: IP, PC, PC open
- Three specific **applications**:
  - Intrusion Detection, Perimeter surveillance and security
  - Retail management intelligence and security
  - Traffic and transport surveillance, management and security

FUNCTIONALITY

The high performance of VCApresence and VCAsurveillance is due to the underlying high quality tracker. It results in a much lower false alarm rate and higher detection rate than many other Video Analytics systems.

VCApresence: UDP's primary VCApresence offers advanced activity detection, far more advanced than any standard Video Motion Detection (VMD) solution currently available. It includes features such as tamper detection, camera shake cancellation and the ability to track stopped, loitering and slow-moving objects that other VMDs cannot support.

UDP Technology

Clear Sight, Clearer Insight

Original Digital Video Solutions for Today's Tough Security Demands

Video Analytics – A New Standard

- Primary intrusion detection:
  - The Presence filter detects when an object, person or vehicle is inside or crossing a zone or a line
  - Camera attack detection: detects moving, defocusing or covering of the camera
  - Detection zones are polygonal with a variable number of vertices so that any shape can be supported
  - Detection zone can also be a line, which can have one or many segments
  - Includes non-detection zones for masking possible sources of false alarms
  - Fast moving objects are detected even if they pass through the zone or line quickly
- Camera shake cancellation: tracker works even if the camera is on a swaying pole
- Tamper detection: alarm is triggered for cameras no longer providing effective coverage due to being obscured by a plastic bag, a spray painted lens or moved from its correct position
- Designed for IP & PC platforms
- Free of charge with most UDP products

VCAsurveillance: The high-end VCAsurveillance package provides additional functionality and advanced intrusion detection, including a wide range of behavior filters and counting functions suitable for a many different CCTV analysis applications. Obtainable via license.

Includes all features of **VCApresence,** plus:

Enter and Exit Detection

An "object entered" alarm is raised when an object crosses from the outside to the inside of a detection zone. Conversely, an "object exited" alarm is raised when an object crosses from the inside to the outside of a detection zone.

Stopping Detection

Objects that are stopped inside a zone for longer than the defined amount of time will trigger the rule and raise an alarm.

Dwell detection

Objects that dwell inside a zone for longer than the pre-defined amount of time will trigger the rule and raise an alarm.

Directional Detection

Objects that travel in the configured direction (within the limits of the acceptance angle) through a zone or over a line trigger the rule and raise an alarm.

Abandoned Object Detection

This detects the abandoning of an object in a pre-defined zone e. g. a bag or suitcase left on the street.

Removed Object Detection

Significant objects are detected when carried into the zone, trigger the rule and raise an alarm. E. g. a missing marked object such as a picture in a museum.

Tailgating Detection

Object tailgating is defined as two objects crossing a virtual line or zone within in a pre-defined time frame.

UDP Technology

Clear Sight, Clearer Insight

Original Digital Video Solutions for Today's Tough Security Demands

Video Analytics – A New Standard

For example, a second unauthorized vehicle enters a parking lot close to a first vehicle that has access permission, or two people enter a security zone with a single access card.

Object Classification

VCAsys can perform object classification once the camera has been calibrated. Object classification is based on properties extracted from the object including object area and speed.

Objects Counting

Up to 40 on-screen counters linked to the detection rules, provide on-screen counting of all detection objects.
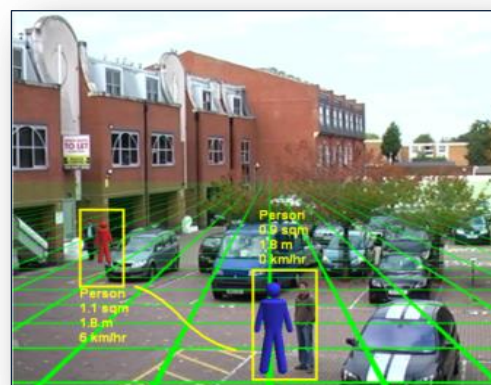
VCAcount: High-accuracy counting optimized for multiple objects (people and/or vehicles) in high density conditions.

- Counting license can co-exist with any other VCA package, and it can be activated on top of VCApresence or VCAsurveillance

MAJOR BENEFITS

The web browser interface included in each of UDP's IP devices provides complete access to all the features of the analytics package. Real-time on-screen annotation of the object tracking and segmentation bitmap (blobs) gives information about the operation of the VCA. All configuration and control is done by the HTTP API which provides comprehensive integration capabilities. An event can trigger digital output contact, email or API messages, detailing the bounding box, trail, rule, zone, time and event ID of alarms. Metadata is provided as an XML data stream.

- Advanced SDK package with worldwide support, provides comprehensive capability to integrate the VCA into any DVR/NVR or video management system (VMS)

- Unique, easy to use, patented 3D calibration suitable for overhead and side-viewing cameras – calibration in metric or imperial units

- On-screen display of object classification, speed, area and height

- Speed filter with upper and lower speed thresholds

- Filter on object class – for example people, group of people, vehicle, clutter, etc.

- Filter out small animals, birds and blowing trash by excluding objects in the clutter category

- Object classes can be changed by the user

- Combined filter using object class and one other filter

- Includes full forensic metadata stream in XML format for customer use

- Abandoned object and removed object detection

UDP Technology

Clear Sight, Clearer Insight

Original Digital Video Solutions
for Today's Tough Security Demands

Video Analytics – A New Standard

PLATFORM BASED PACKAGES

UDP provides three options for delivering its video analytics: one edge based option and two server based options, providing the most effective way to integrate the software into your system.

VCAsysIP	Embedded in "Edge" devices such as UDP's NVC encoders and IPE network cameras
VCAsysPC	Integrates with UDP's range of NCP, ECP, ECPR, MP and HP series video capture cards
VCAsysPCopen	Runs independently of PC hardware in the system and hence can be used with any type of PC or IP capture device from other manufacturers

ADDITIONAL FEATURES

Camera shake cancelation	This feature stabilizes the image before video analytic analysis and provides a steady picture in an unstable environment. For example, a camera installed on a high pole at a road junction.
Calibration configuration	A mimic's 'feet' stay fixed to the screen position when the camera height, tilt and field of view (FOV) are changed (the mimic feet are fixed but the mimic's height can change). This is helpful in calibrating the scene: the mimic remains steady alongside objects in the video image so that matching their height is easy as no further adjustment of the mimic's position is necessary.
Configuration interface makes it easier to use	• Transparent grid • Ability to pan and roll grid controlled by slider • Ability to add extra mimics • Rendering of horizon
Load and save VCA configuration	Enables the exporting and importing of the entire VCA configuration instead of only rules and zones.
Megapixel support	The video analytics functionality is fully supported in all UDP's megapixel camera offerings.
Additional advanced VCA settings	Additional advanced settings include tracking options enabling a minimum tracked object size to be set. Objects smaller than the specified sizes are totally ignored by the tracking engine. Furthermore, the user can specify how long (in milliseconds) alarmed objects and track annotation are displayed.

UDP Technology

Clear Sight, Clearer Insight

Original Digital Video Solutions for Today's Tough Security Demands

Video Analytics – A New Standard

ADDITIONAL APPLICATIONS

In addition to traditional Intrusion Detection, Perimeter Surveillance and Security application, VCAsurveillance covers the following extensive range of additional detection functions
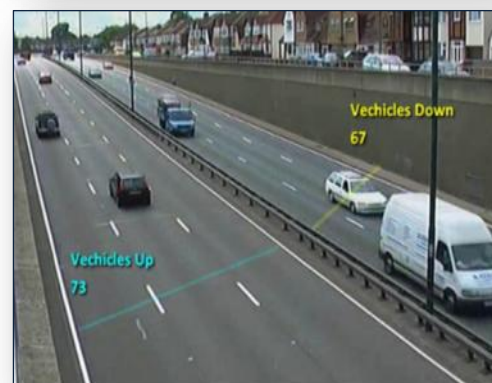for specific applications:

Retail Management Intelligence and Security

- Flow analysis
- Counting
- Warehouse protection
- High theft item monitoring
- Stock monitoring
- Unauthorized access or walking in the wrong direction
- Fallen merchandise
- Blocked emergency exit

Transport Management and Security

- Traffic flow analysis
- Vehicle counting
- Stabilize cameras on poles
- Vehicle stalled on shoulder
- Vehicle stopped in unauthorized location
- Driving in the wrong direction
- Speed limit warning
- Stopping in emergency zone
- Parking in illegal places (Bus stop, etc)

About UDP

UDP's comprehensive range of IP and PC-based video products, with embedded **Intelligent Video Analytics** as a standard feature, covers:

- All types of H.264 & MPEG-4 IP Cameras, Megapixel and real time full HD
- Stand alone and blades H.264 IP Encoders.
- PC based video capture and compression cards
- External H.264 rack enclosure, 12 or 40 channels

UDP's solutions are marketed exclusively through OEM partners and provide world-wide technical support in more than 40 countries through strategically located international branch offices.

**Video Analytics
Powered by**

VCA TECHNOLOGY

UDP Technology

Clear Sight, Clearer Insight

UDP Technology Ltd.
Tel: +82-2-2605-1486
Fax: +82-2-2605-1489
sales@udptechnology.com

EMEA Headquarters
Tel: +44-0-20 8337-5092
Fax: +44-0-20 8337-6507
sales_eu@udptechnology.com

USA Branch
Tel: +1-407-872-3020
Fax: +1-407-872-3040
sales_usa@udptechno