The Intelligent Video Analysis system by Bosch, IVA 6.10, is the guard-assistant system of choice when you need reliable video motion detection for indoor or outdoor use.

IVA 6.10 is state-of-the-art intelligent video analysis that reliably detects, tracks, and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image. Advanced tasks like multiple line crossing, route following, loitering, idle and removed object detection, counter flow detection, crowd density estimation, and overhead people counting are available. Object filter based on size, speed, direction, aspect ratio, and color can be defined.

For calibrated cameras, IVA 6.10 automatically distinguishes between the object types upright person, car, bike, and truck. The software also supports geolocation, that is it outputs tracked objects in relation to camera position for subsequent visualization on maps. It allows you to record all of the object information and change the rules even after the fact for fully configurable forensic search.

IVA 6.10 is a licensed option already fully prepared in many Bosch cameras.

Functions

Robust motion detection
IVA 6.10 is continuously developed in-house by the Bosch research group and brings the latest level of intelligence to IVA. It intelligently adapts to difficult conditions like changes in lighting or environment such as rain, snow, clouds, and leaves blowing in the wind. The built-in tamper detection generates alarms on camera hooding/masking, blinding, defocusing, and repositioning.

The following tasks are available:
- Detect objects within, entering, or leaving an area
- Detect multiple line crossing from single line up to three lines combined in a logical row
- Detect objects traversing a route
- Detect loitering in an area related to radius and time
- Detect objects which are idle for a predefined time span
- Detect removed objects
- Detect objects who’s properties such as size, speed, direction, and aspect ratio change within a configured time span according to specification (for example something falling down)
- Count objects crossing a virtual line or entering a certain area
- Overhead people counting (Bird’s eye view)
- Detect a certain crowd level in a predefined field

- Embedded analytics eliminates dedicated PCs
- Adds metadata for forensic search to recordings
- Broad range of detecting tasks and object filters available
- Automatic classification of person, bike, car, truck
- Detect specified motion direction and speed even in crowds (for example a person moving the wrong way in a one-way gate)
- Detect objects that move contrary to the motion of all other objects in the scene, even in crowds
- Take snapshots of frontal faces
- Combine tasks using scripts

Filters
To enhance robustness, IVA 6.10 can be configured to ignore specified image areas and small objects. For calibrated cameras, IVA 6.10 now automatically distinguishes between upright persons, bikes, cars, and trucks.

Furthermore, object size, speed, two-way direction, aspect ratio, and color filters can be used in any combination to create specific detection rules for exactly the objects you are looking for.

Statistics on object properties are stored and can be displayed for fine tuning the object filters. Object properties can also be defined by selecting an appropriately similar object in the video.

Intelligence-at-the-edge concept
IVA 6.10 is available in Bosch cameras and encoders. This intelligence-at-the-edge concept allows a decision on which videos are captured based on video content analysis. By only selecting alarm video for streaming or recording, less bandwidth and storage is used.

Alarm conditions can be signaled by a relay output on the unit or an alarm connection, to stream video to a decoder or video management system. Alarms can also be transmitted to a video management system to start extended alarm scenarios.

As well as creating alarms, IVA 6.10 produces metadata that describes the content of the analyzed scene. This metadata is sent over the network—and may also be recorded—together with the video stream.

Forensic Search
The recorded metadata can be used for a full forensic search where the rules can be changed even after the fact within Bosch Video Management System (Bosch VMS ) or Video Client.

New tasks can be defined and adapted for each search, and the recorded metadata is then scanned and evaluated accordingly.

Forensic Search is very time efficient and can scan a huge recording database for events within seconds.

Intuitive graphical user interface
Setup is available via device web page as well as via Configuration Manager. A wizard-based graphical user interface guides through the configuration and provides all the necessary tools to set up IVA 6.10 and specify detection or counting tasks.

All configuration options are visualized exemplarily as overlays for feedback and can directly be manipulated for intuitive configuration.

When movement is detected, the object is outlined in yellow on the display and its motion is displayed as a green trajectory. If an object and its motion match the rule conditions defined for one of the detector tasks, an alarm is created and the object outlines are switched to red. Additionally, an idle object is marked with an [I] and a removed object with an [X].

Configuration complexity on demand
In the minimal configuration, IVA 6.10 will alarm on any object in the scene. More complex setups are supported as well: Up to eight independent tasks can be set up in the GUI, and the alarm objects for each task can be restricted according to their properties.

Camera calibration can be added for perspective correction and to obtain object properties in metric or imperial systems. Half-automated calibration wizards are available to support the calibration. A task script editor is available for fine tuning and combining predefined tasks, and additional eight tasks can be set up there.

Installation/configuration notes
IP cameras from Bosch are grouped by their common product platform (CPP) generation. IVA 6.10 is available on CPP4 and CPP6 based IP cameras, provided these cameras have an additional dedicated hardware unit (FPGA) for computing IVA.

Amongst the CPP4 based IP cameras with IVA are the DINION IP 7000, FLEXIDOME IP 7000, AUTODOME IP 7000, and MIC IP 7000 families with HD resolution.

The CPP6 based IP cameras with IVA include the DINION IP 8000 family with MP resolution as well as FLEXIDOME IP panoramic 7000 MP.

For best perimeter protection performance, use DINION IP starlight 8000 MP together with IVA 6.10.

The IVA 6.10 software functionality is a free-of-charge upgrade of IVA 5.60 and IVA 6.0 and already part of all IVA 6.10 enabled products with the firmware release of 6.10 or later. It upgrades automatically from an already installed IVA 5.60 or IVA 6.0 when installing the 6.10 firmware to the device.

The IVA 6.10 license enables all IVA 6.10 features. IVA 6.10 is set up using either the device web page or the Configuration Manager that is included with the product and available for download from the Bosch website.

Configuration Manager can be installed as often as required on any PC that will be used for configuration of IVA 6.10 and the products themselves.