

Security Management System - Configuring Video Analytics

Introduction

This document describes the steps for configuring the 'Video Analytics (VA)' module available in the Security Management System software.

Security Management System video analytics module is designed for simplest possible configuration, with only a few parameters required to be configured by the users. All other complexities are managed by the algorithms internally.

The Video Analytics module configuration includes 2 steps –

- (a) Configuring monitoring parameters – these parameters are related to object detection and object tracking
- (b) Configuring VA features – these are feature specific parameters. Video Analytics module includes several features like intrusion detection, line crossing, asset protection etc.

The 'monitoring parameters' are related to overall detection and tracking, hence are required to be configured for every camera where video analytics feature is required to be enabled.

The detection and tracking information from the core monitoring is used by individual video analytics features for applying rules and to generate alarms or to generate specific information.

It is NOT required to configure all VA features for all cameras. Only those VA features which are relevant and are required should be configured.

Video analytics algorithms require relatively high processing power. Please refer to the camera configuration guidelines document for ensuring proper video stream selection for video analytics processing. Please refer to the hardware recommendation document for details about hardware capabilities expected for video analytics software.

Importance of Correct Camera Setup

Video Analytics algorithms are advanced and complex; and rely heavily on the 'pre-learned data' available in the software's in-built database. The pre-learned data is compiled from several real-life installations and is used as basis for object detection, object classification and object tracking operations – which are basic steps in any video analytics algorithm.

The video analytics algorithms expect camera angles, positioning and zoom levels, similar to the ones in real-life deployments. Correct camera setup, including camera positioning, camera angle and camera zoom is essential, to get good accuracy from the video analytics software.

It is recommended to consider the camera setup requirements for the video analytics software, during the design phase of a project - where camera positions, angles and zoom levels are decided.

In case where video analytics software is used as an extension to the existing security system, with cameras already mounted; it is recommended to analyze the setup for every camera as per the guidelines available in this document.

In case the guidelines are not met, the cameras should be tweaked to match the expectations from the video analytics software, as per the guidelines described in the next section.

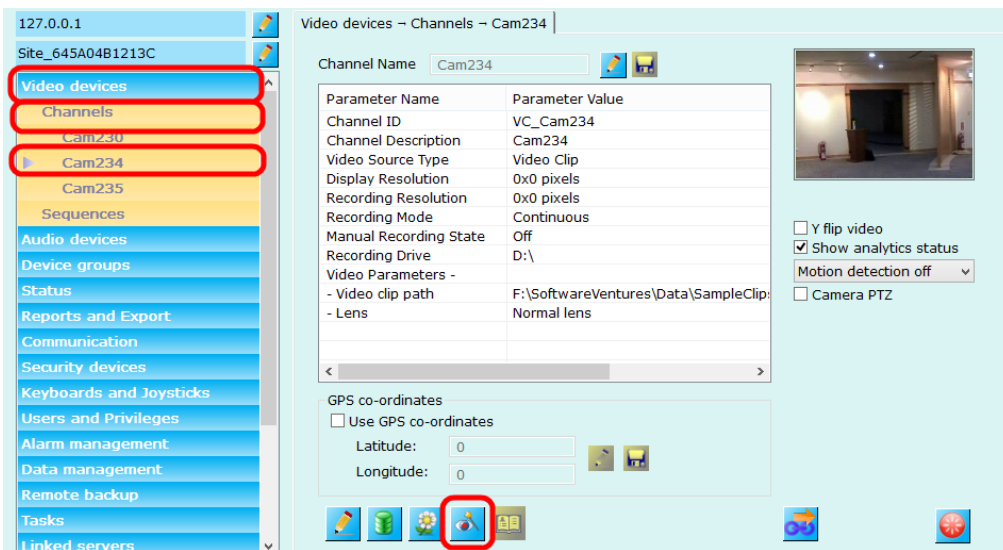
Most of the camera setup requirements are met in the real-life deployments. In case cases, a few tweaks may be needed, as per the guidelines described in following sections.

Camera setup guidelines for the video analytics

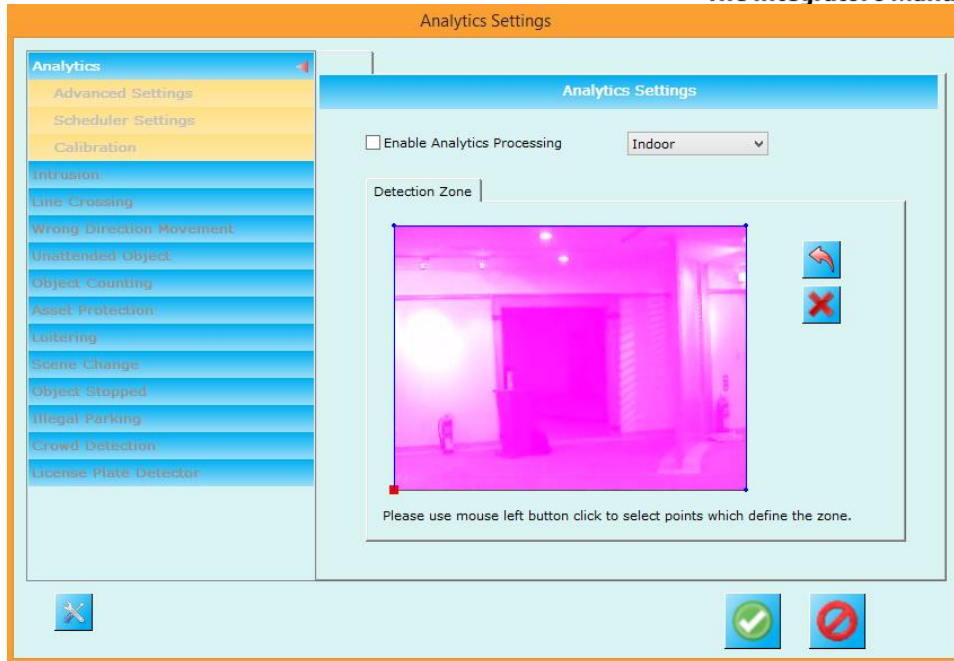
1. Please mount the camera similar to deployment / real-life situation. Especially during the evaluation, this point is important. E.g. camera placed on a table is not real-life case and hence the video analytics algorithms would not be able to analyze the video correctly, as its database does not have the data for such situations which do not exist in case of real-life deployments.
2. Camera should be a fixed camera, rigidly mounted. The shakes and vibrations may create problems for the video analytics algorithms.
3. Camera should be mounted and zoom level should be adjusted such that a single person (for people detection application) or a single vehicle (for vehicle detection application) is visible fully, at any possible position where the person/vehicle can exist in the field of view of the camera, and is part of the 'detection zone' in the video analytics software. Objects too close to the camera will not be fully visible; hence such camera angles should be avoided.
4. More specifically, the object (person / vehicle) should cover 5% to 15% area on the video image. It should not be smaller or bigger. This is usually available in most of the normal real-life camera installations.
5. Current algorithms for many of the video analytics features are fine tuned for low-crowd situations, where maximum total number of people/vehicles in the scene is 2-3. Please refer to the feature sub-section for more details.
6. Please turn off Automatic Gain Control (AGC) or similar settings in the camera which change the video properties (like brightness / contrast etc) automatically, based on the scene changes.
7. The scene as viewed from the camera should have consistent lighting. There can be natural lighting changes, but un-natural changes lighting cases like flashing lights should be avoided as far as possible.

Accessing video analytics configuration

1. Execute the Security Management System server software
2. Add cameras to the Security Management System server software for monitoring
3. Navigate to the 'Video devices' link from the navigation bar available at the left hand side. Under 'Channels' sub-link, click on the link specific to the camera for which 'Video Analytics' needs to be configured.
4. This will display the camera information page



5. On the camera information page, click on the 'Analytics settings' button, available in the toolbar, at the bottom of the page
6. This will pop up the video analytics configuration dialog box.



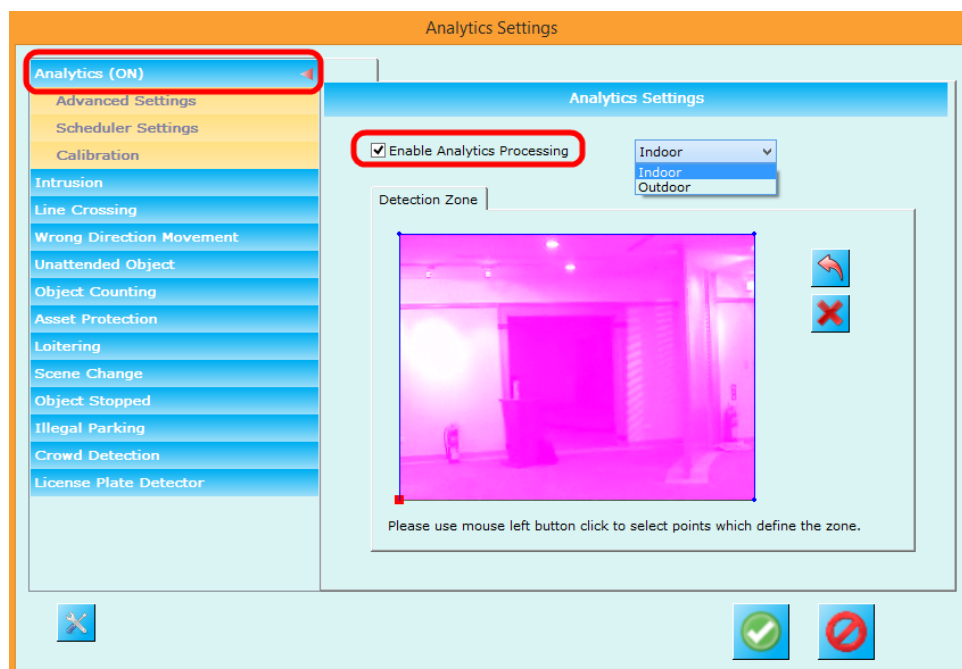
7. Video analytics configuration for the specific selected camera can be done from this dialog box.
8. Video analytics configuration is applicable to single selected camera. To configure video analytics for multiple cameras, please open the 'Video Analytics configuration' dialog box for each of those cameras and configure Video Analytics parameters for each camera separately.

Configure monitoring parameters

Note – Monitoring parameters should be configured for every camera for which one or more video analytics features are required to be activated

Enable video analytics processing

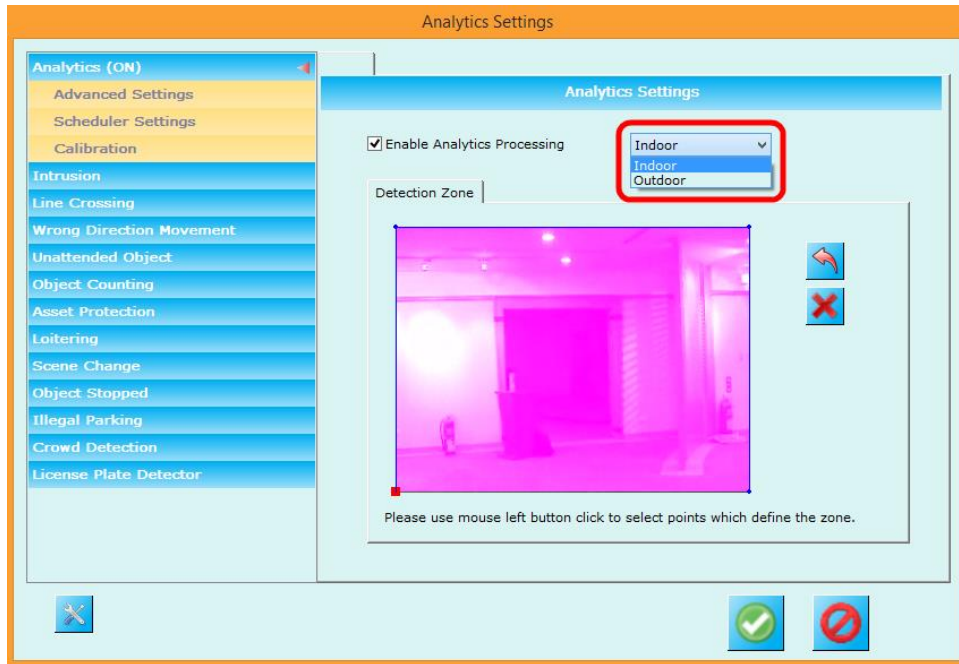
1. Click on the 'Analytics' menu from the left hand side navigation bar.
2. Select 'Enable analytics processing' check-box. This will enable analytics processing



3. When analytics is enabled, "(ON)" text is displayed next to 'Analytics' menu from the left hand side navigation bar. It also activates all the menus from the left hand side navigation bar.
4. If 'Enable analytics processing' is un-checked; complete video analytics processing will stop. All configurations will be remembered but video analytics will not happen. Hence 'Enable analytics processing' can be used as single click ON/OFF for complete video analytics processing, without resetting complete configuration.

Set type – Indoor / Outdoor

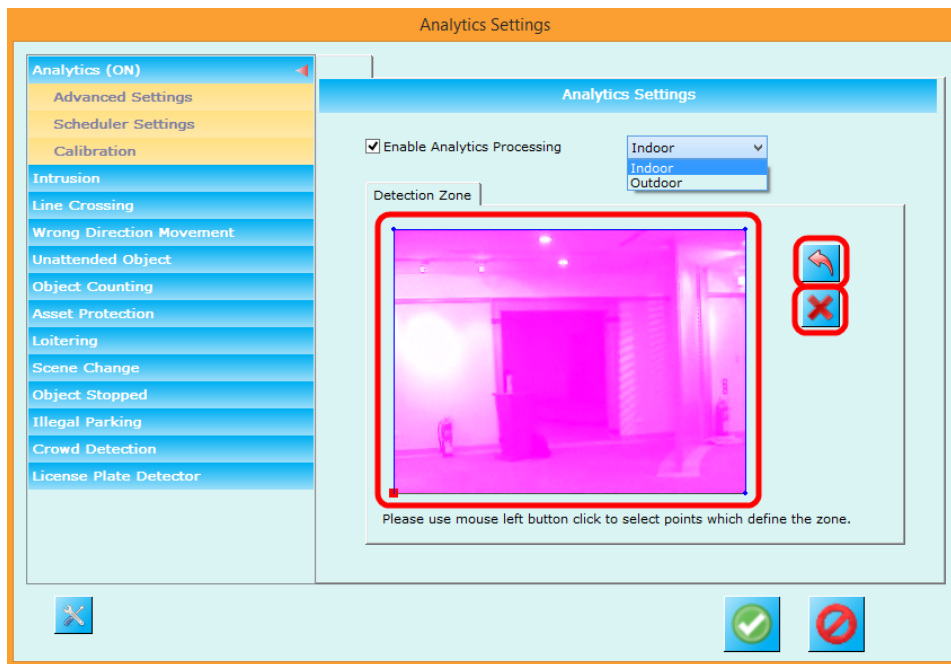
1. Select the processing type as Indoor / Outdoor



2. If the lighting conditions are perfectly controlled and they do not change over the day, please select 'Indoor' type. Otherwise, if there is any change in lighting conditions expected, please select 'Outdoor' type.

Define monitoring zone

1. The monitoring zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted. By default 4 corner points are selected and hence complete scene image is selected as monitoring zone for video analytics monitoring.

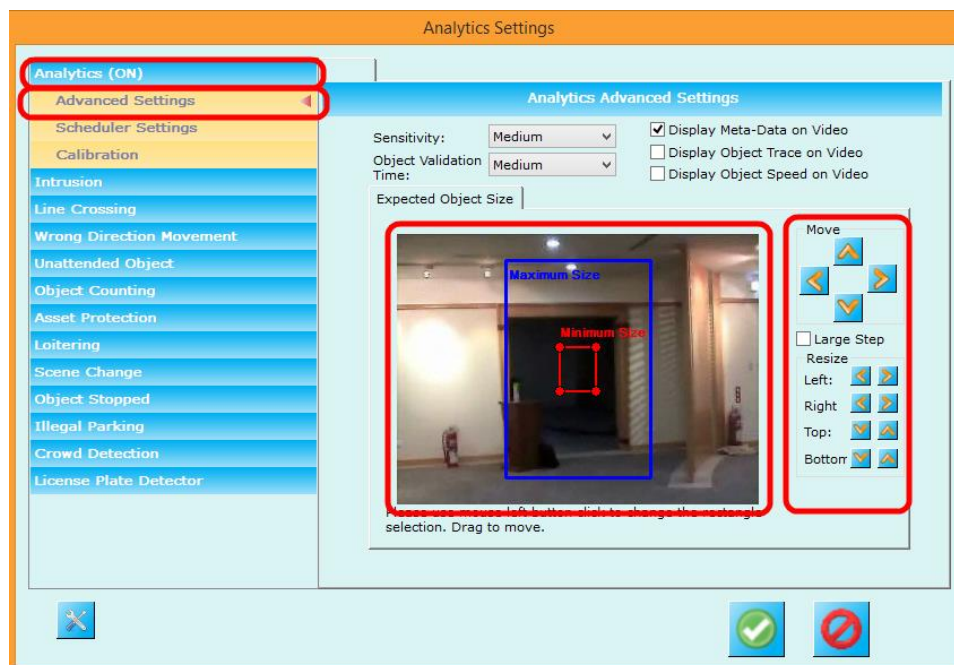


2. To change the monitoring zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the monitoring zone will be calculated automatically.
3. Sequence of the points selection is important, as it affects the monitoring zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
4. Video analytics monitoring will NOT be processed for all pixels which are outside the selected monitoring zone. Hence object detection and tracking will NOT happen while objects are outside the monitoring zone. Hence no alarms will be generated while objects are outside the monitoring zone.
5. It is important to define the detection zone correctly.
 - (a) If there are any moving objects like doors, gates, tree leaves etc, it is advisable to exclude them from the monitoring zone.

- (b) It is also advisable to exclude certain regions from the monitoring zone where alarms are not expected to be generated. Eg in indoor camera view, the walls can be excluded if large part of walls are visible. Only those sections of the walls can be included in monitoring zone which are overlapped by people which people move in the view of the camera.

Define expected object sizes

1. Click on the 'Advanced Settings' sub-menu available under 'Analytics' menu from the left hand side navigation bar.



2. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during video analytics processing. Location of the rectangle is not used during video analytics processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.
3. It is recommended to define 'Minimum object size' to half size (half the width and half the height) of the actual minimum size object required to be detected during video analytics processing.
4. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Maximum object

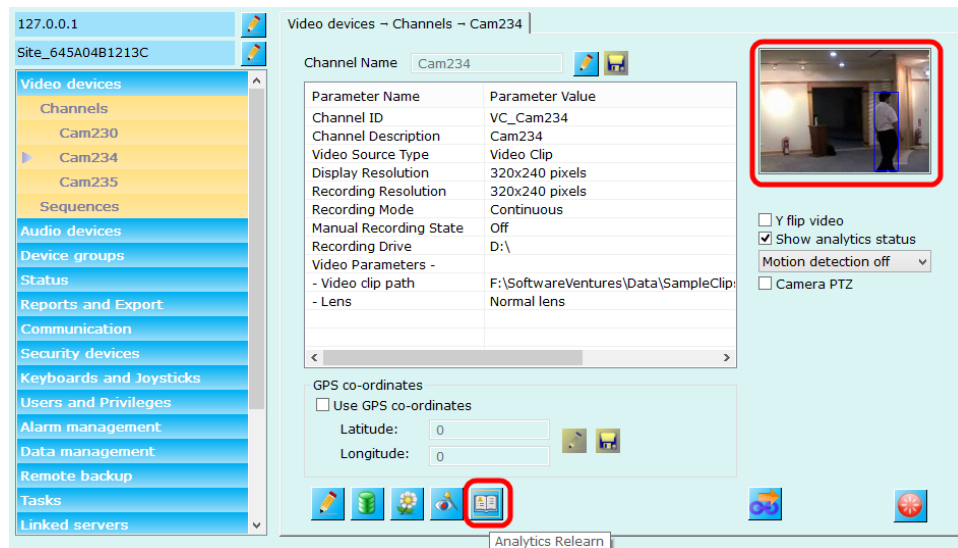
size'. The size (width and height) are the parameters used during video analytics processing. Location of the rectangle is not used during video analytics processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.

5. It is recommended to define the 'Maximum object size' to 1.5 times size (1.5 times width and 1.5 times height) of the actual maximum size object required to be detected during video analytics processing.
6. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
7. Keep 'Sensitivity' selection is 'Medium' as the video analytics algorithm is able to intelligently adjust the sensitivity for most of the situations.
8. Keep 'Object validation time' selection is 'Medium' as it is the most suitable option in most of the situations.
9. Keep 'Display Meta-data on video' selected
10. Keep 'Display object trace on video' de-selected
11. Keep 'Display object speed on video' de-selected

Fine tuning monitoring parameters

Initial tests

1. Click on the 'Set Configured Parameters' button available at the bottom of the 'Analytics Settings' dialog box; to save the configuration and to close the dialog box.
2. The video analytics processing will start. Please wait for approximately 5 seconds to allow the algorithm to learn the background. If there are no moving objects in the camera view, learning will be finished quickly, otherwise it may take longer time. Hence during initial quick tests, it is advisable to have no moving objects in the camera view.
3. During initial tests, it is advisable to ensure that no moving objects exist in the camera view, and then clicking on 'Analytics relearn' button available on the camera details page, at the bottom. Click on 'yes' button on the confirmation dialog box, which will be displayed after clicking on the 'Analytics relearn' button.



4. This will initiate re-learning. Please wait for approximately 5 seconds.
5. The video analytics processing result will now be displayed on the video in form of rectangles drawn around detected and tracked objects
6. To test the video analytics monitoring parameters configuration, let the target objects (people or vehicles) to move in the camera view normally. Ensure that single bounding box is displayed around each of the test objects correctly, and consistently while the objects are inside the detection zone. If single bounding

box is not displayed correctly around every object or if the bounding box vanishes for some time and comes back; there is some problem with monitoring parameters configuration.

Settings 'Object validation time'

1. In most of the cases, the 'Medium' option selection for 'Object validation time' is the best choice.
2. However, in certain specific situations 'Object validation time' can be adjusted for better object detection and tracking. These situations are as follows -
3. It is strongly advised to use 'Medium' option selection for 'Object validation time' except for the specific situations described above.

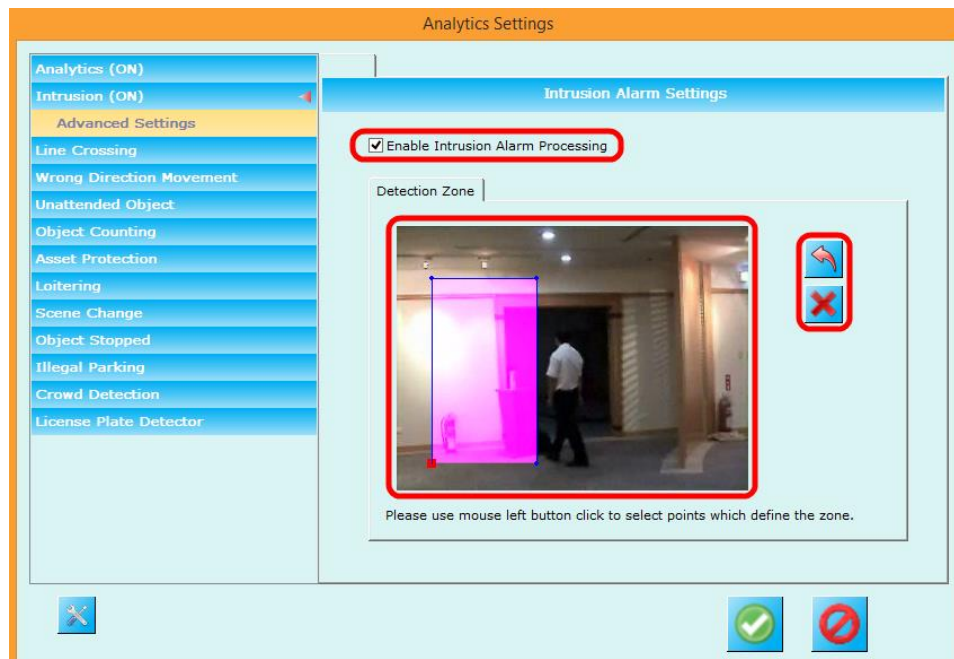
Intrusion detection

Introduction

1. Intrusion detection feature analyzes the detected and tracked objects; and generates 'Intrusion' alarm when any object enters the defined 'intrusion zone'.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the intrusion detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring intrusion detection

Configuration

1. Click on the 'Intrusion' menu from the left hand side navigation bar.
2. Select 'Enable Intrusion Alarm processing' check-box. This will enable the intrusion detection processing.

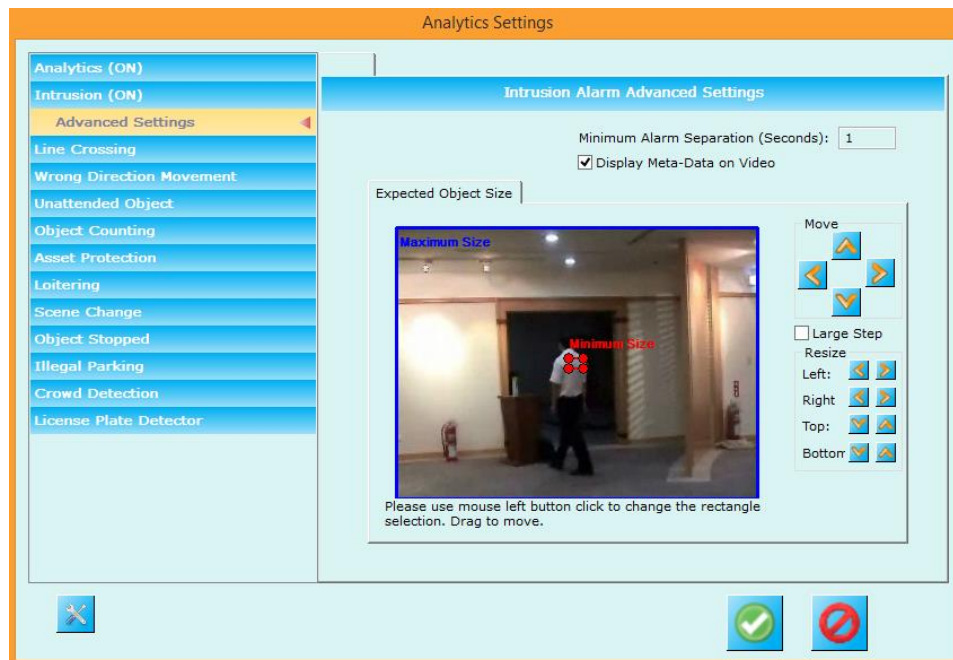


3. The intrusion detection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.

4. To change the intrusion detection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the intrusion detection zone will be calculated automatically.
5. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
6. Please note that 'intrusion detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'intrusion detection zone' is for intrusion alarm processing. Hence the 'intrusion detection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'intrusion detection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'intrusion' alarms will be processed in such parts.

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Intrusion' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'Intrusion' alarm is detected, the object which generates 'Intrusion' alarm is validated against this object size configuration. If the alarm generator object size

is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.

3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.
4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'Intrusion detection' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during intrusion detection processing. Location of the rectangle is not used during intrusion detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.
7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during intrusion detection processing. Location of the rectangle is not used during intrusion detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Minimum Alarm Separation (seconds)' value to 1
10. Keep 'Display Meta-data on video' selected

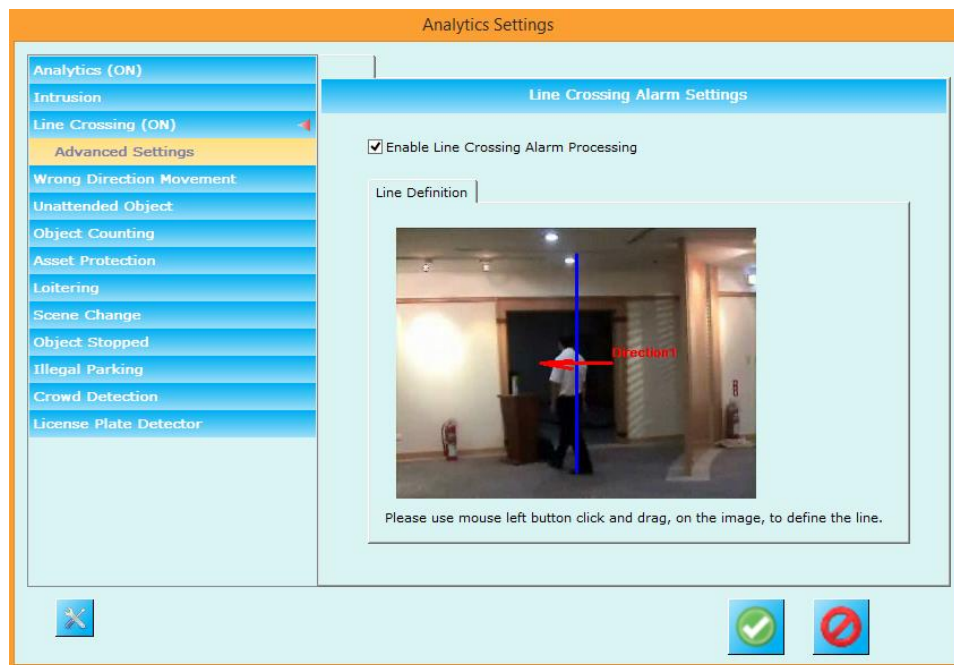
Line crossing

Introduction

1. Line crossing feature analyzes the detected and tracked objects; and generates 'Line crossing' alarm when any object moves from one side of the line to another side.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the line crossing detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring line crossing detection

Configuration

1. Click on the 'Line Crossing' menu from the left hand side navigation bar.
2. Select 'Enable Line Crossing Alarm processing' check-box. This will enable the line crossing detection processing.

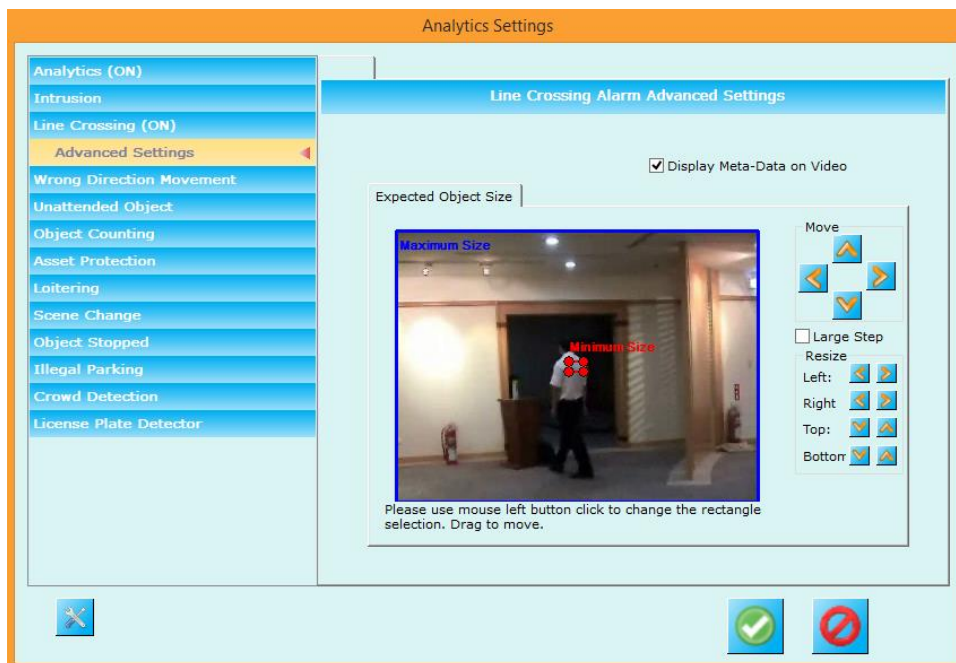


3. The detection line can be specified using mouse left button click and drag on the image.

4. The 'Direction 1' direction is automatically calculated and displayed.
5. The 'Line crossing' alarm is generated when object moves from one side of the line to the other side. That is in both directions – Direction 1 and Direction 2 (which is opposite to Direction 1)

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Line Crossing' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'Line Crossing' alarm is detected, the object which generates 'Line Crossing' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.

4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'Line crossing' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during line crossing processing. Location of the rectangle is not used during line crossing processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.
7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during line crossing processing. Location of the rectangle is not used during line crossing processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Display Meta-data on video' selected

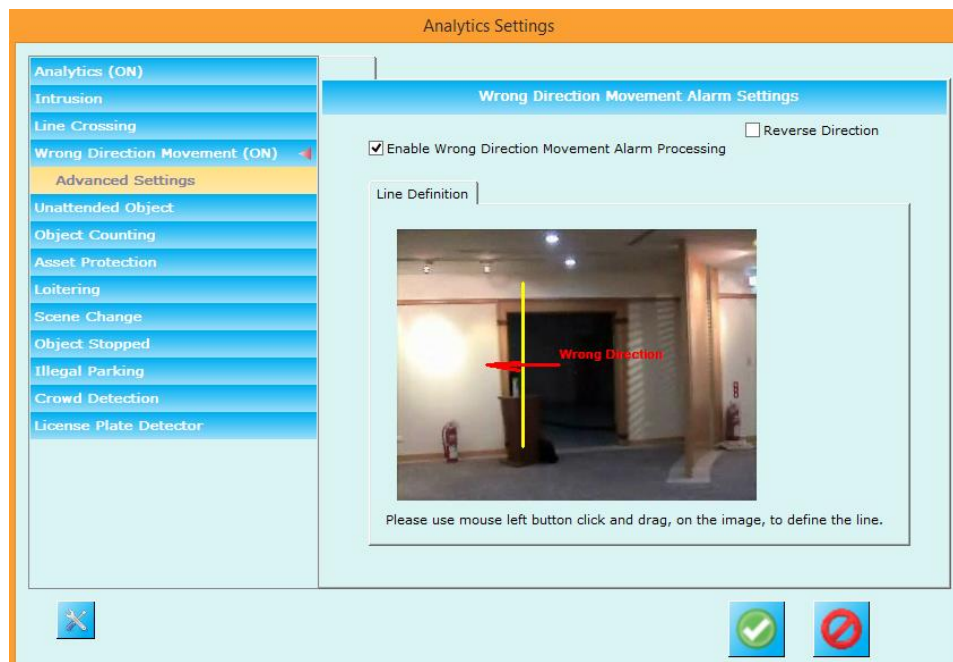
Wrong direction movement

Introduction

1. Wrong direction movement detection feature analyzes the detected and tracked objects; and generates 'Wrong direction movement' alarm when any object moves in the configured restricted direction.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the wrong direction movement detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring wrong direction movement detection

Configuration

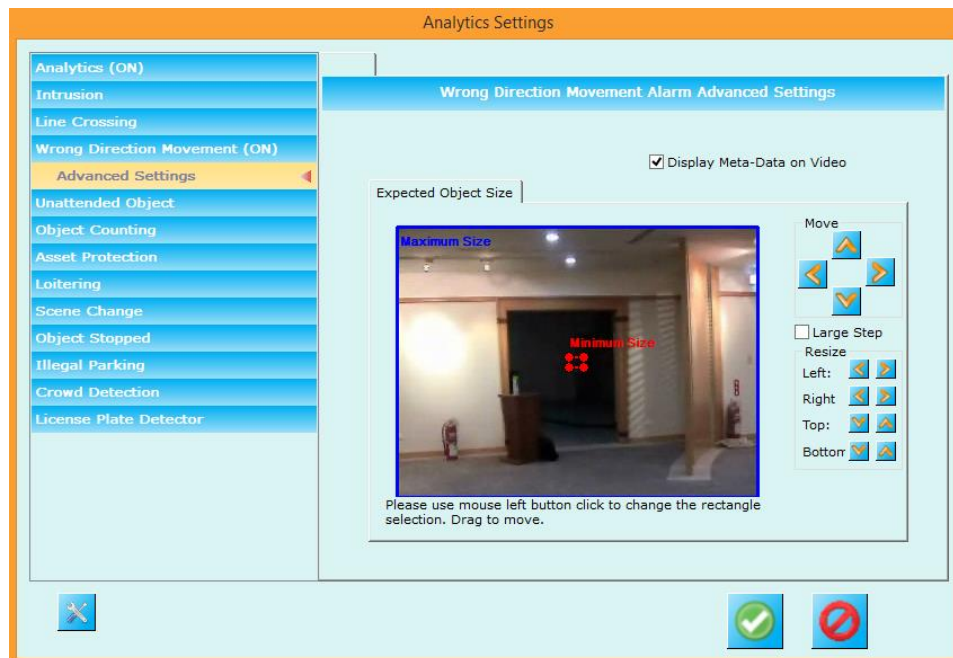
1. Click on the 'Wrong Direction Movement' menu from the left hand side navigation bar.
2. Select 'Enable Wrong Direction Movement Alarm processing' check-box. This will enable the wrong direction movement detection processing.



3. The detection line can be specified using mouse left button click and drag on the image.
4. The 'Wrong direction' is automatically calculated and displayed. This direction can be flipped using the 'Reverse direction' checkbox available at the top-right corner.
5. The 'Wrong direction movement' alarm is generated when object moves from one side of the line to the other side in the specified 'wrong direction'. Objects moving in the other direction does not generate any alarm

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Wrong Direction Movement' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'wrong direction movement' alarm is detected, the object which generates 'wrong direction movement' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence

set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.

4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'wrong direction movement' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during wrong direction movement detection processing. Location of the rectangle is not used during wrong direction movement detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.
7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during wrong direction movement detection processing. Location of the rectangle is not used during wrong direction movement detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Display Meta-data on video' selected

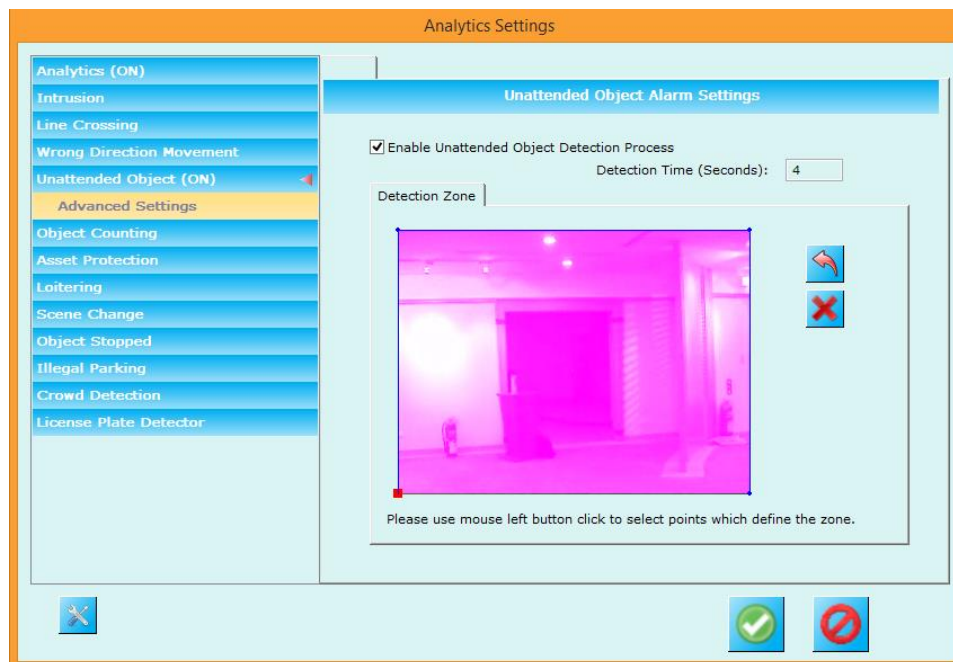
Unattended object detection

Introduction

1. Unattended object detection feature analyzes the detected and tracked objects; and generates 'Unattended object' alarm when any object is left un-attended in the specified zone.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the unattended object detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring unattended object detection

Configuration

1. Click on the 'Unattended Object' menu from the left hand side navigation bar.
2. Select 'Enable Unattended Object Detection Processing' check-box. This will enable the unattended object detection processing.

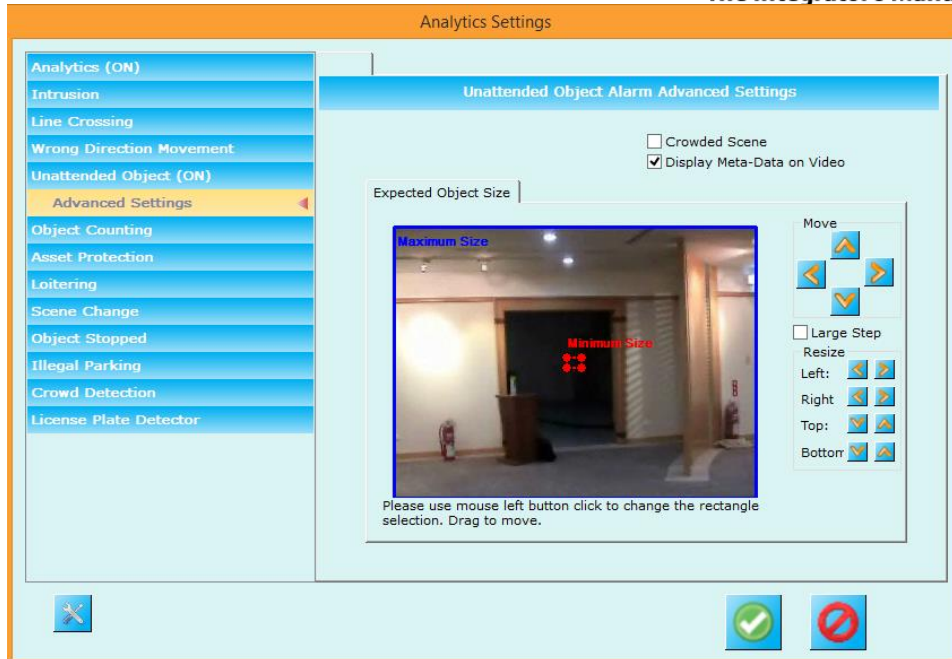


3. Specify the 'Detection Time (Seconds)'. It is recommended to set it between 2 seconds to 10 seconds.

4. The unattended object detection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.
5. To change the unattended object detection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the unattended object detection zone will be calculated automatically.
6. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
7. Please note that 'unattended object detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'unattended object detection zone' is for unattended object alarm processing. Hence the 'unattended object detection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'unattended object detection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'unattended object' alarms will be processed in such parts.

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Unattended Object' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'unattended object' alarm is detected, the object which generates 'unattended object' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.
4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'unattended object detection' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during unattended object detection processing. Location of the rectangle is not used during unattended object detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the

- minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.
7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. Then use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during unattended object detection processing. Location of the rectangle is not used during unattended object detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
 8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
 9. Keep 'Crowded scene' de-selected
 10. Keep 'Display Meta-data on video' selected

Object counting

Object counting is a special feature, since it is related to 'data generation', rather than 'alarm generation'.

Separate user guide is available for object counting.

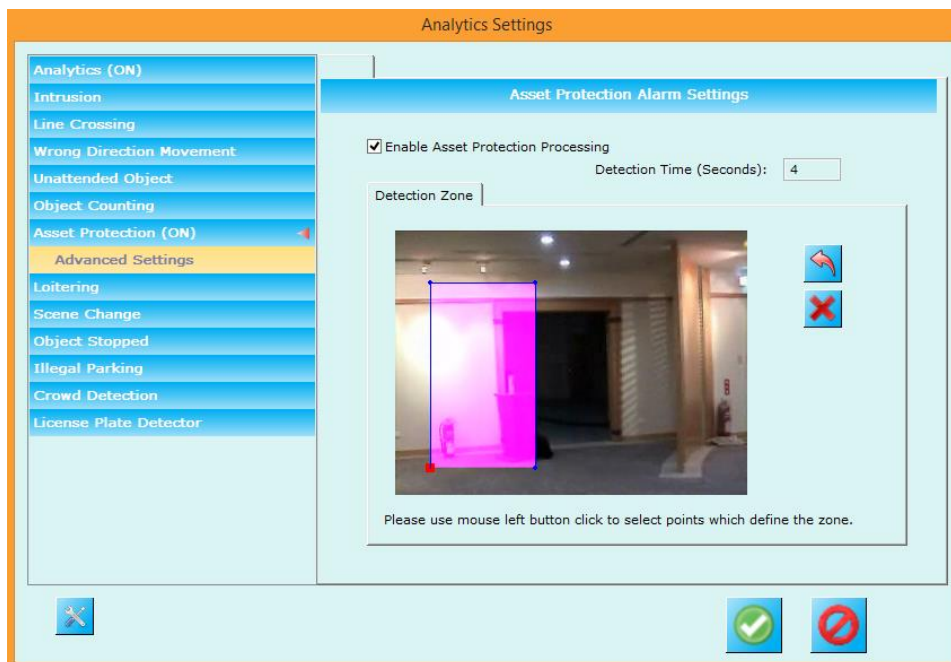
Asset protection

Introduction

1. Asset protection feature analyzes the detected and tracked objects; and generates 'Protected asset moved' alarm when any object is removed from the specified zone.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the asset protection processing. Hence it is important to confirm the core object detection and tracking is working correctly before configuring asset protection

Configuration

1. Click on the 'Asset Protection' menu from the left hand side navigation bar.
2. Select 'Enable Asset Protection Processing' check-box. This will enable the asset protection processing.

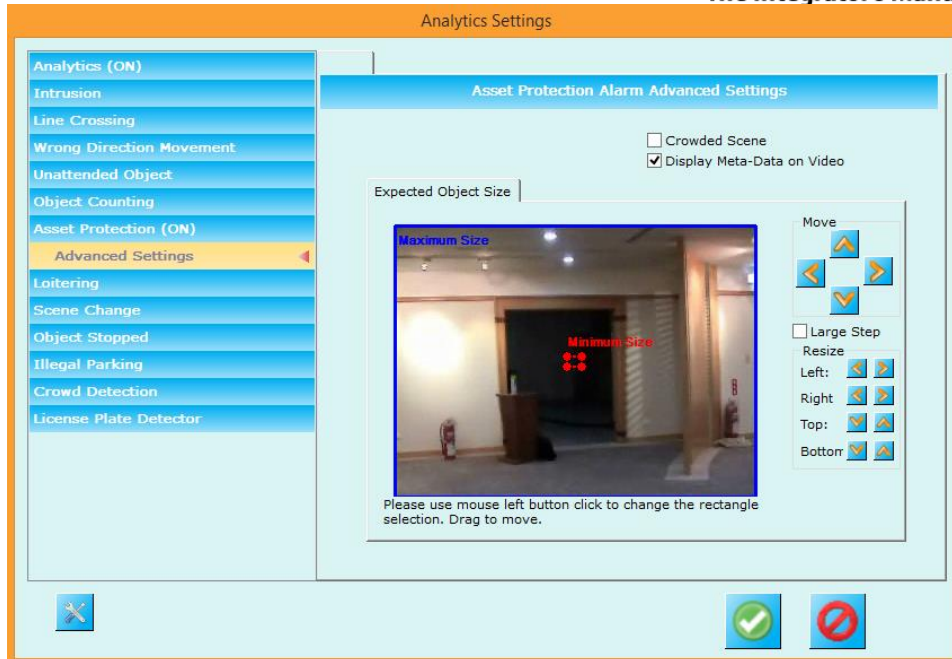


3. Specify the 'Detection Time (Seconds)'. It is recommended to set it between 2 seconds to 10 seconds.

4. The asset protection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.
5. To change the asset protection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the asset protection zone will be calculated automatically.
6. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
7. Please note that 'unattended object detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'asset protection zone' is for asset protection alarm processing. Hence the 'asset protection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'asset protection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'asset protection' alarms will be processed in such parts.

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Asset Protection' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'asset protection' alarm is detected, the object which generates 'asset protection' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.
4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'asset protection' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during asset protection processing. Location of the rectangle is not used during asset protection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.

7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. Then use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during asset protection processing. Location of the rectangle is not used during asset protection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Crowded scene' de-selected
10. Keep 'Display Meta-data on video' selected

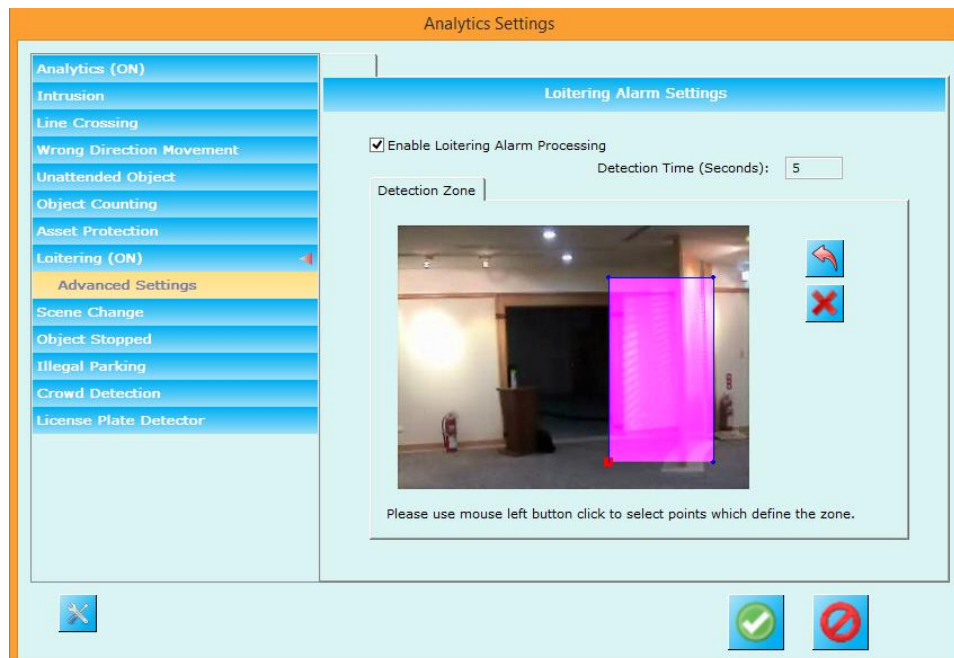
Loitering

Introduction

1. Loitering feature analyzes the detected and tracked objects; and generates 'Loitering' alarm when any object continues to be present in the 'loitering zone' for more than the specified time duration.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the loitering detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring loitering detection

Configuration

1. Click on the 'Loitering' menu from the left hand side navigation bar.
2. Select 'Enable Loitering Alarm processing' check-box. This will enable the loitering detection processing.

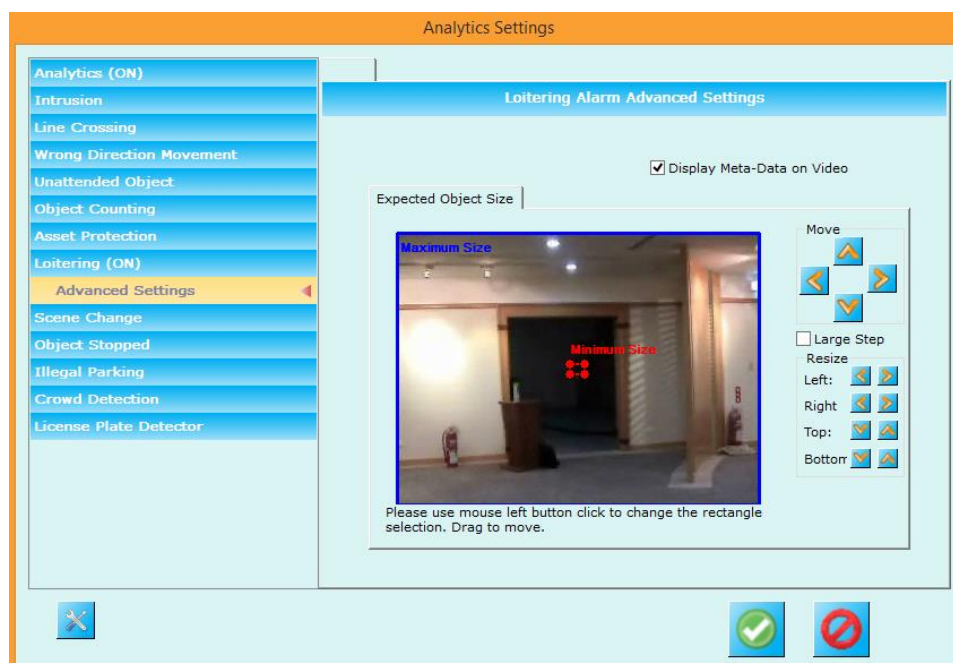


3. Specify the 'Detection Time (Seconds)'. It is recommended to set it between 5 seconds to 20 seconds.

4. The loitering detection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.
5. To change the loitering detection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the loitering detection zone will be calculated automatically.
6. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
7. Please note that 'loitering detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'loitering detection zone' is for loitering alarm processing. Hence the 'loitering detection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'loitering detection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'loitering' alarms will be processed in such parts.

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Loitering' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'loitering' alarm is detected, the object which generates 'loitering' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.
4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'loitering detection' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during loitering detection processing. Location of the rectangle is not used during loitering detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.
7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during loitering detection processing. Location of the rectangle is not used during loitering detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Display Meta-data on video' selected

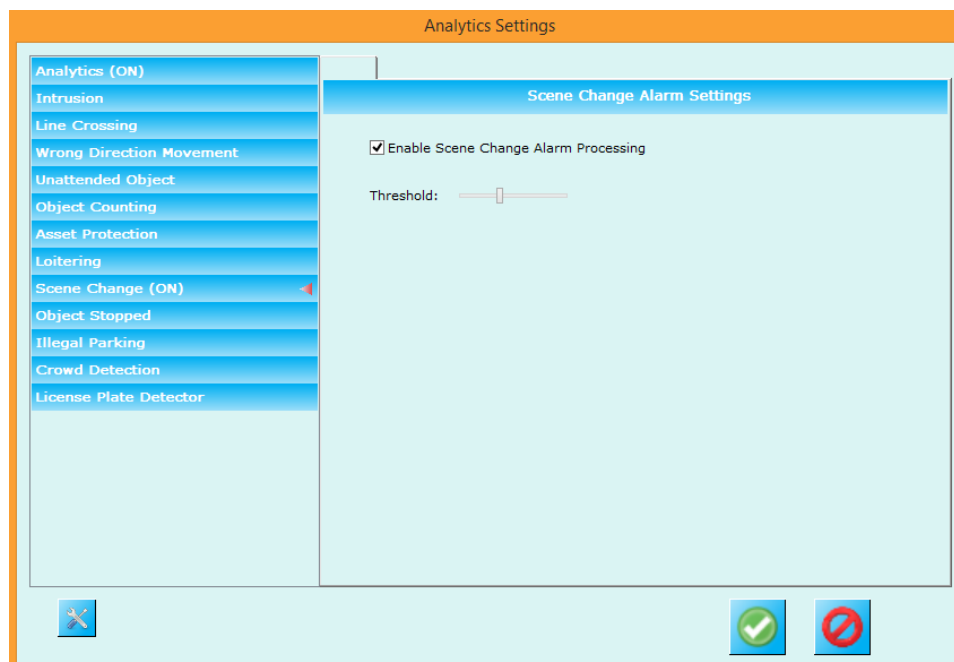
Scene change detection

Introduction

1. Scene change detection feature analyzes the detected and tracked objects; and generates 'Scene change' alarm when the camera view changes considerably.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the scene change detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring scene change detection

Configuration

1. Click on the 'Scene Change' menu from the left hand side navigation bar.
2. Select 'Enable Scene Change Alarm processing' check-box. This will enable the scene change detection processing.



3. The default 'threshold' should work fine in most of the case.

4. Configuration of the threshold needs to be done iteratively by doing tests and re-adjusting the threshold. If false alarms are observed, increase the threshold. If true alarms are missed, reduce the threshold

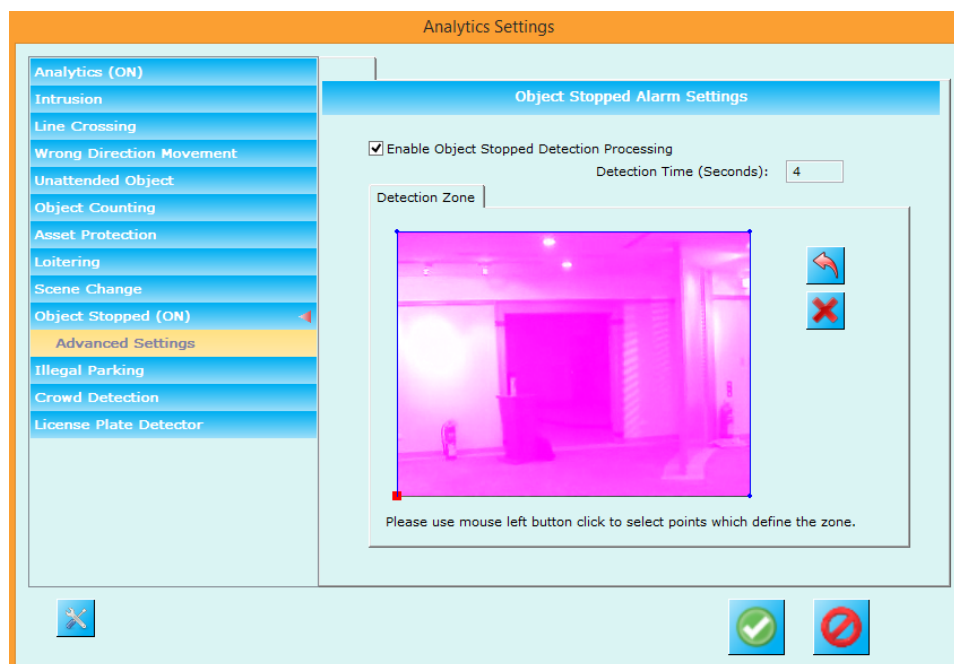
Object stopped detection

Introduction

1. Object stopped detection feature analyzes the detected and tracked objects; and generates 'Object stopped' alarm when any object stops moving in the specified zone.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the object stopped detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring object stopped detection

Configuration

1. Click on the 'Object Stopped' menu from the left hand side navigation bar.
2. Select 'Enable Object Stopped Detection Processing' check-box. This will enable the object stopped detection processing.

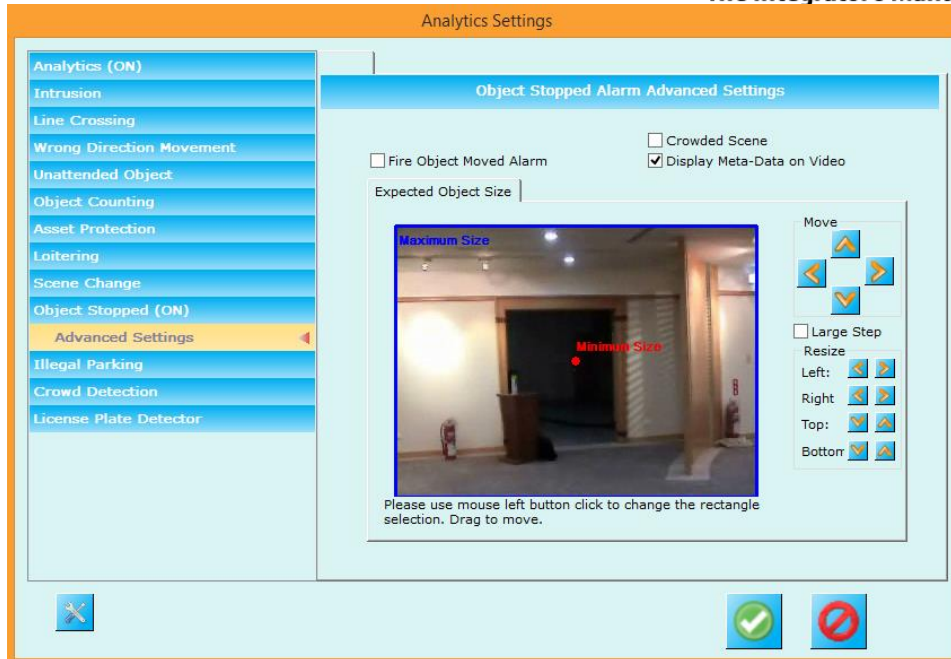


3. Specify the 'Detection Time (Seconds)'. It is recommended to set it between 2 seconds to 10 seconds.

4. The object stopped detection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.
5. To change the object stopped detection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the object stopped detection zone will be calculated automatically.
6. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
7. Please note that 'object stopped detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'object stopped detection zone' is for object stopped alarm processing. Hence the 'object stopped detection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'object stopped detection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'object stopped' alarms will be processed in such parts.

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Object Stopped' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'object stopped' alarm is detected, the object which generates 'object stopped' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.
4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'object stopped detection' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during object stopped detection processing. Location of the rectangle is not used during object stopped detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.

7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. Then use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during object stopped detection processing. Location of the rectangle is not used during object stopped detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Crowded scene' de-selected
10. Keep 'Display Meta-data on video' selected
11. Select 'Fire Object Moved Alarm' if 'Object Moved' alarm is required to be generated when the stopped object starts moving again

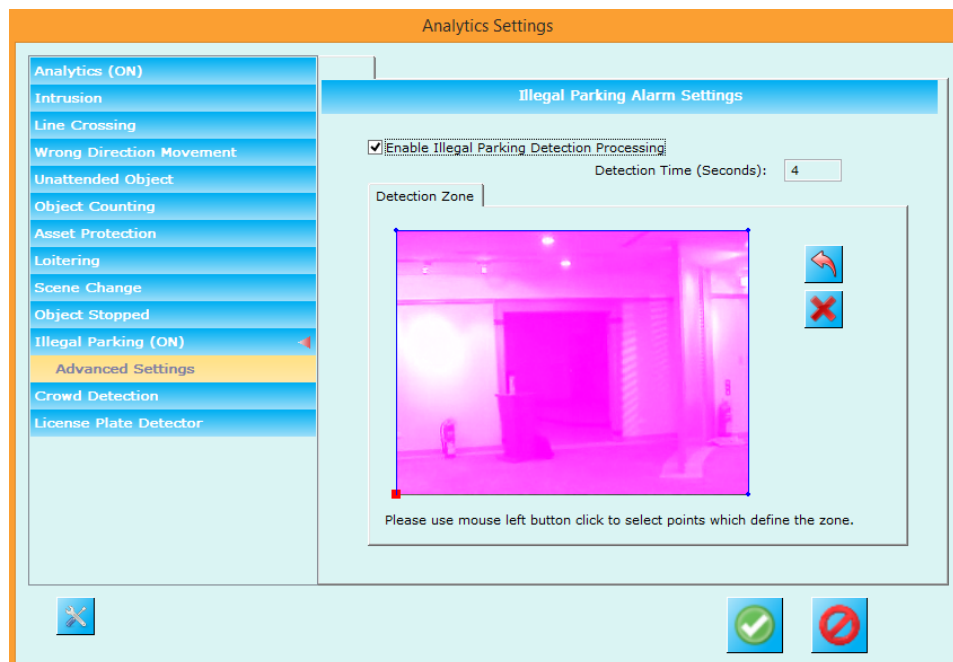
Illegal parking detection

Introduction

1. Illegal parking detection feature analyzes the detected and tracked objects; and generates 'Illegal parking' alarm when any object stops moving in the specified zone.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the illegal parking detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring illegal parking detection

Configuration

1. Click on the 'Illegal parking' menu from the left hand side navigation bar.
2. Select 'Enable Illegal Parking Detection Processing' check-box. This will enable the illegal parking detection processing.

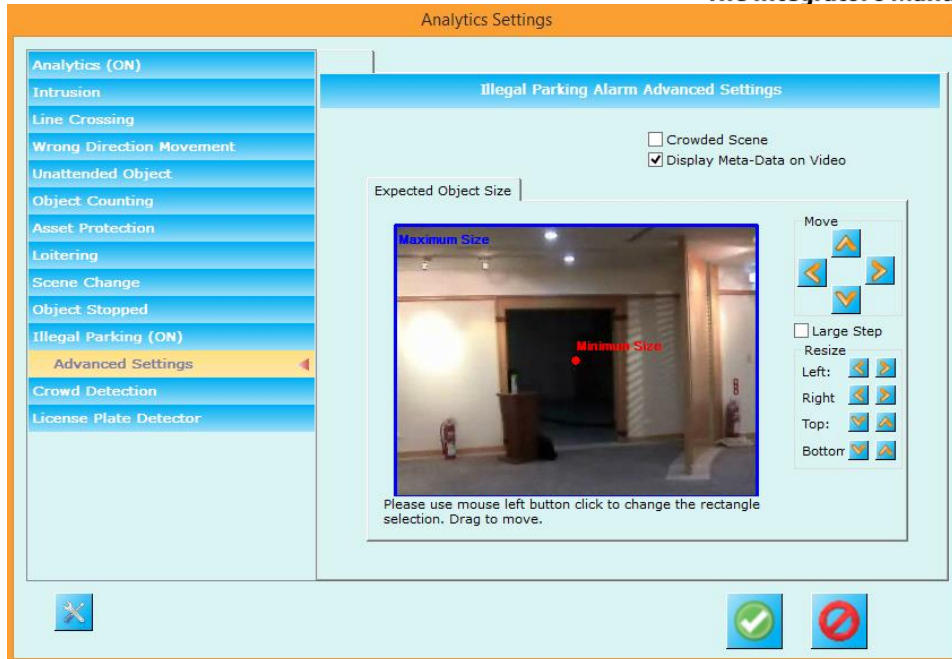


3. Specify the 'Detection Time (Seconds)'. It is recommended to set it between 2 seconds to 10 seconds.

4. The illegal parking detection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.
5. To change the illegal parking detection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the illegal parking detection zone will be calculated automatically.
6. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
7. Please note that 'illegal parking detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'illegal parking detection zone' is for illegal parking alarm processing. Hence the 'illegal parking detection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'illegal parking detection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'illegal parking' alarms will be processed in such parts.

Advanced settings

1. Click on the 'Advanced Settings' sub-menu available under 'Illegal Parking' menu from the left hand side navigation bar.



2. The object size configuration from this page is for alarm filtration. Whenever 'illegal parking' alarm is detected, the object which generates 'illegal parking' alarm is validated against this object size configuration. If the alarm generator object size is within the 'minimum size' and 'maximum size' specified; the alarm is treated as a valid alarm. If the alarm generator object size is outside the specified object size range, the alarm is discarded.
3. Setting 'Minimum size' to minimum possible and 'Maximum size' to maximum possible will ensure that no alarms get discarded due to object size check. Hence set the 'Minimum size' to minimum possible and 'Maximum size' to maximum possible as a first iteration.
4. Then test the system and check whether any false alarms are observed. If false alarms are observed and can be eliminated by object size filtration; specify the 'Minimum size' and 'Maximum size' accordingly.
5. Please note that 'Object size' configuration in 'illegal parking detection' advanced settings page is different than 'Monitoring parameters object size' configuration.
6. To select 'Minimum object size', click inside the 'Minimum size' rectangle, to select it. The use the 'Move' and 'Resize' buttons to set the 'Minimum object size'. The size (width and height) are the parameters used during illegal parking detection processing. Location of the rectangle is not used during illegal parking detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Minimum size' rectangle using mouse drag and drop.

7. To select 'Maximum object size', click inside the 'Maximum size' rectangle, to select it. Then use the 'Move' and 'Resize' buttons to set the 'Maximum object size'. The size (width and height) are the parameters used during illegal parking detection processing. Location of the rectangle is not used during illegal parking detection processing. The location (and hence 'move' buttons) are however useful to point to any available object in the image and defining the minimum size using it as a reference. It is also possible to move the 'Maximum size' rectangle using mouse drag and drop.
8. It is important to select the expected minimum and maximum object sizes correctly. All objects which are present in the camera view but are outside this size range are ignored and hence no alarms are generated for them.
9. Keep 'Crowded scene' de-selected
10. Keep 'Display Meta-data on video' selected

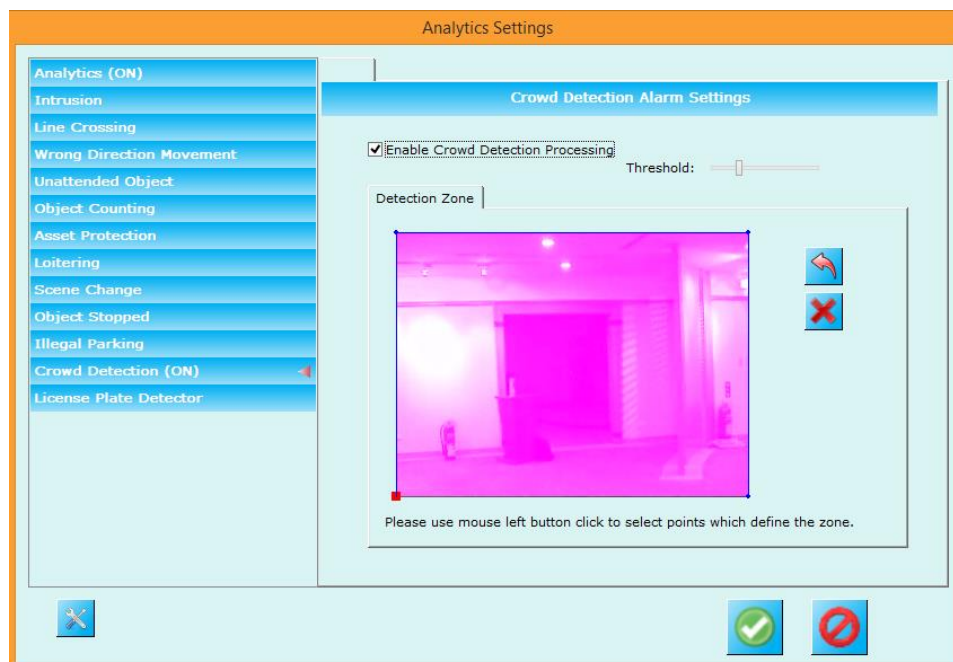
Crowd detection

Introduction

1. Crowd detection feature analyzes the detected and tracked objects; and generates 'Crowd detection' alarm when density of the objects in the specified zone goes beyond the specified threshold.
2. Please ensure that 'monitoring parameters' are configured properly and verified, as explained in the 'Configuring monitoring parameters' and 'Fine tuning monitoring parameters' sections in this document. If monitoring configuration is not correct, object detection and tracking will not work properly and it will in turn affect the crowd detection. Hence it is important to confirm the core object detection and tracking is working correctly before configuring crowd detection

Configuration

1. Click on the 'Crowd Detection' menu from the left hand side navigation bar.
2. Select 'Enable Crowd Detection Processing' check-box. This will enable the crowd detection processing.



3. The crowd detection zone consists of series of points, which define a region. All pixels inside the defined zone are highlighted in the user interface. All pixels outside the defined zone are not highlighted.

4. To change the crowd detection zone, click on the 'Reset' button which will remove all the points. Then click on the image with mouse left button to select points one after the other. The points will be connected automatically and the illegal parking detection zone will be calculated automatically.
5. Sequence of the points selection is important, as it affects the detection zone calculation. Please use the 'Remove last point' button to undo the selection of last selected point.
6. Please note that 'crowd detection zone' is different than 'monitoring zone' (as described in the 'Configuring monitoring parameters' section in this document). 'Monitoring zone' is for object detection and tracking and 'crowd detection zone' is for crowd detection alarm processing. Hence the 'crowd detection zone' should be smaller than the 'monitoring zone', or it can be same as 'monitoring zone'. Any part of the 'crowd detection zone' which is outside the 'monitoring zone' will logically be excluded as no objects will be detected and tracked in such parts and hence no 'crowd detection' alarms will be processed in such parts.
7. The default 'threshold' should work fine in most of the case.
8. Configuration of the threshold needs to be done iteratively by doing tests and re-adjusting the threshold. If false alarms are observed, increase the threshold. If true alarms are missed, reduce the threshold