Operation Guide

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Camera Positioning

Camera positioning angle is very critical to getting good data for video analytics. Care should be taken to avoid the following: a) object size being too large so as to occupy a large part of the scene, and b) occlusions.

Typically, cameras can be installed with one of three views:
1 Top-Down view (Vertical ceiling mount)
2 Perspective or Angled view (Wall or Corner mount looking down) – Useful for detecting general intrusion.
3 Side View (Horizontal wall mount at lower height).

The Top-Down View is generally good for counting, detecting direction of movement, etc. The second option (at angle looking down) is good for detecting intrusions. The third option (side view) should only be used for face detection. It is not recommended for other analytics since objects can be hidden from view (occlusions).

FOV (Field of View) and Object Size

For people detection, the object or person size should be 10-20% of the whole screen. The object should not be so large as to occupy 40-100% of the screen.

Recommended Scene and Lighting Conditions

Here are some general recommendations for lighting at the scene for Video Analytics.
   1. The scene should be well-lit. Low lighting produces video noise that triggers false object alerts.
   2. Stable and consistent lighting will provide good results. Fluctuations in lighting or uneven lighting at the scene will cause false alarms in any video analytics system.
   3. If providing proper lighting is an issue, it is recommended that an IR camera with IR illumination be used as a camera source.
   4. Avoid occlusions (one object going in front of another). This will break object tracks and will cause object disappearance and other related problems.
   5. Avoid pointing the camera directly at light sources as described below. These following situations will make the video unusable for analytics and will temporarily signal saturation.
        a. Camera pointed directly at the sun.
        b. Camera pointed directly at light source
        c. Camera looking at vehicles with headlights (cars, trains in tunnels)
   6. Avoid or minimize shadows by repositioning the camera or light sources.
   7. If possible avoid the presence of trees and other vegetation in the camera's field of view. Swaying or movement of trees and bushes in the wind can cause false alarms. If they need to exist, then use special areas/zones to define/block off the zone as vegetation – these zones will be ignored during processing.
   8. If possible avoid the presence of water areas – rivers, lakes etc. in the camera's field of view. Water areas can cause reflections and ripples in the water can cause false alarms. Swaying or movement of trees and bushes in the wind can cause false alarms. If they need to exist, then use special areas/zones to define/block off these zones; they will be ignored during processing.
   9. Ensure that the size of the objects that are to be tracked in the scene is not too small. Object sizes have to be at least 5-10% of the screen size for consistent detection. If the objects are only few pixels (People or vehicles), it will be difficult to detect them consistently and will cause false alarms on most systems.
   10. Ensure that the object size is not too large – more than 40% of the screen size. The camera should not be too close to the objects being tracked.
   11. We recommend you turn off AGC (Auto Gain), Auto IRIS and White Balance on the cameras. These fluctuate some times and cause notable scene changes. It is possible to run the system with these settings ON, with lower sensitivity, if the scene is stable and fluctuations are less.
   12. Camera lens needs to be clean, and focused for best results.

Camera Zoom, FOV and Angle are important. The following sections address them fully with examples.

Recommended Camera Positioning for Common Applications

I. **Intrusion**

Camera must be at an angle looking down. Camera should be installed at sufficient height to avoid occlusions. The object size should not be too large to occupy large part of scene. It is recommended that the size of object entering in the scene should not exceed 50% of scene size. If the camera is used during night time, then the lighting reflections should be at a minimum to avoid bad detections. Light should be uniformly distributed in the scene and also try to avoid the shadows. Care should be taken that the light source should not be directed on Camera. A Camera at an angle looking down as seen from following picture is good for Intrusion, as is a top down view.

Intrusion
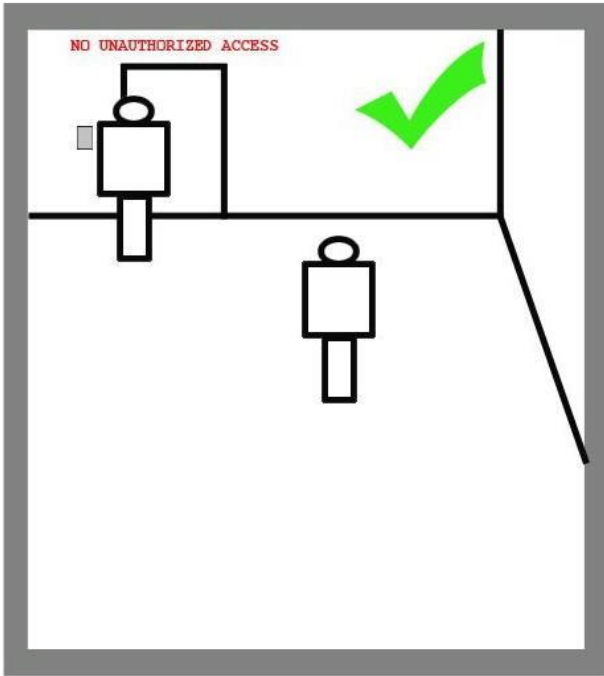
Angled View
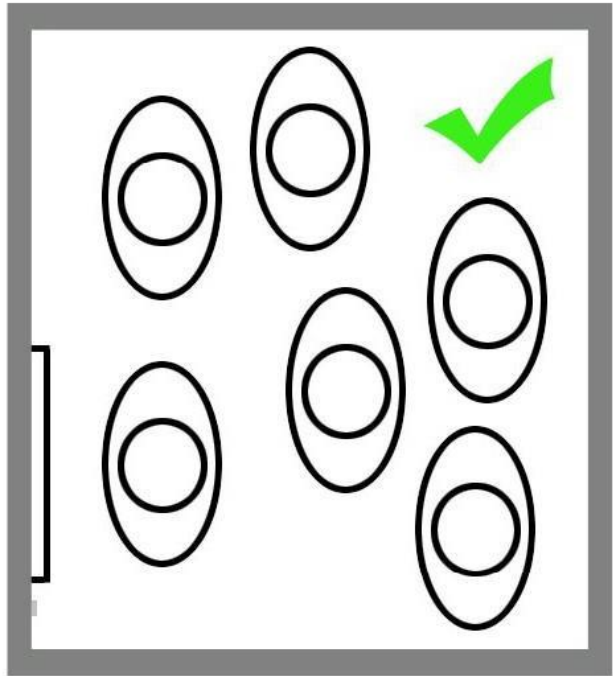
Top Down View

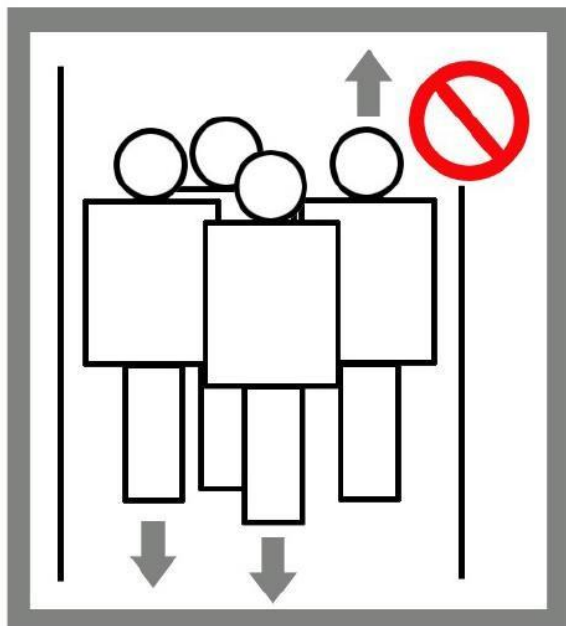# Recommended Camera Positioning for Common Applications

II. Counting

The camera must be installed at Overhead position. The object size should be constant wherever it is within the scene. The Maximum object size in the scene should not exceed 50-60% of scene size.

The perspective (angled) view should be used as least as possible. If the camera is installed from the side at a low angle, then the counting accuracy will be lower. The lighting reflections should be at a minimum to avoid bad detections. Light should be uniformly distributed in the scene to avoid the shadows. Care should be taken that the light source should not be directed on Camera.

Camera position as seen from above Fig.1 is not very good. Since there are lot of reflections and also the view is perspective. Camera position as seen from Fig.2 is good with far less reflections, shadows and the best perspective view.
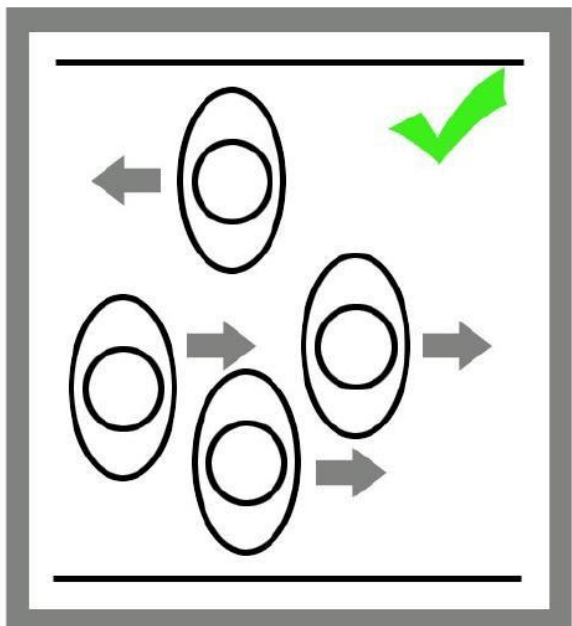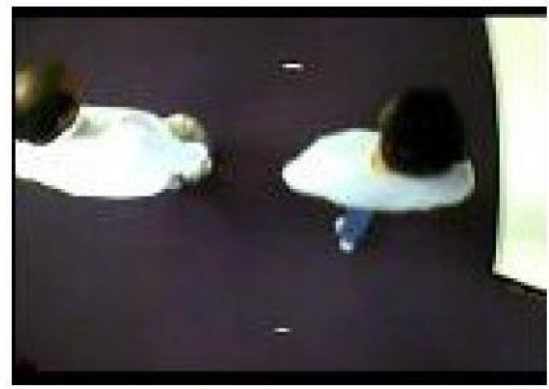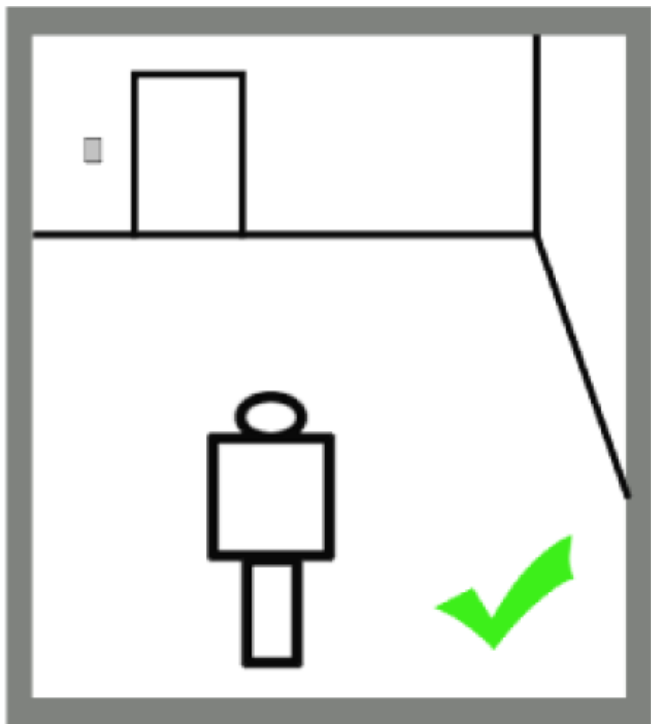
Counting

Angled View

Top Down View

Fig.1

Fig.2

Recommended Camera Positioning for Common Applications

III. Camera Tamper Detection

For Camera Tamper detection, the Camera can be at located at any position; Either Top-Down View, Side View or Front View. The maximum size of objects entering the scene should not exceed 50-60% of scene size. If the camera is used during night time, then the lighting reflections should be at a minimum to avoid bad detections. Light should be uniformly distributed in the scene and also try to avoid shadows. Care should be taken that the light source should not be directed at the camera.
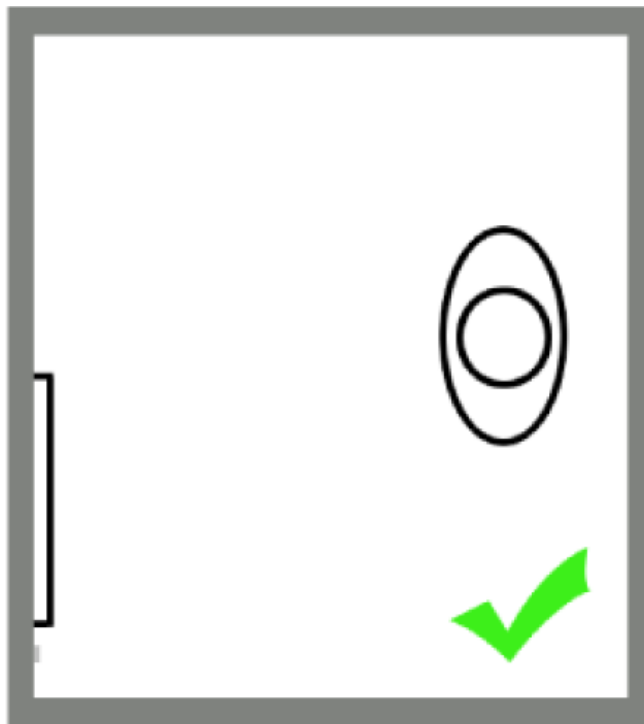
Angled View   Top Down View

List of intelligent video analytics features options

	1. People Counting
	2. Crossing Line
	3. Intrusion
	4. Face Detection / Human Detect

2	**Basic - Intelligent Video analytics**
	1. Intrusion
	2. Object Left
	3. Object Removed
	Price for bundle

3	**Standard - Intelligent Video Analytic**
	1. People Counting
	2. Loitering
	3. Line Crossing / Virtual Fence
	4. Human Detector
	Price for Bundle

4	**Advanced - Intelligent Video Analytic**
	1. Heat Map
	2. Wrong Direction

5	**Premium - Intelligent Video Analytic**
	1. Face Detect