# MEGApix® IVA™ Camera Installation Guide

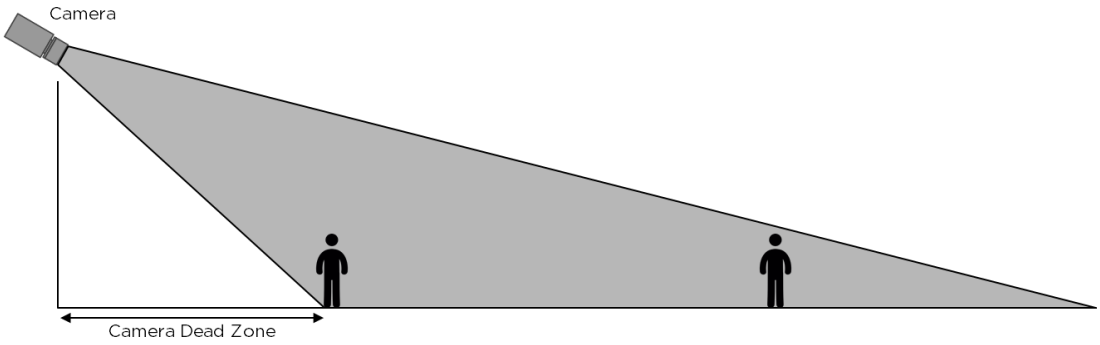
## Camera Installation

A camera should be installed securely, connected properly, mounted firmly, have a clean lens, have the appropriate focal length and in focus. A camera's focus should aim to maximize the amount of the scene in focus.

All cameras should be mounted securely to minimize camera shake and lighting conditions should be stable. This is also to avoid scene movement due to camera movement which can create false targets in the tracker instantly.

## Camera Height and Object Size

Cameras should be mounted so that the dead zone of one camera is covered by another camera's field of view.



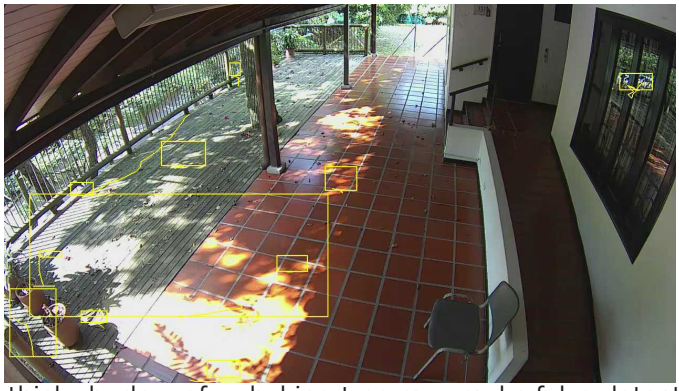

Each camera should be mounted so that all objects appear in the camera's field of view for no less than 2 seconds (or 10 frames). The absolute minimum target size that can be detected is 0.02% of the screen area. At full HD resolution, this corresponds to an area of 17x30 pixels. Every camera should be mounted such that all objects to be detected occupy no more than 10% of the camera's field of view.

## Moving background

The IVA engine is built to try to find and track objects based on the background modeling to continue learning the scene. If some part of the background keeps changing, false object tracking is likely to increase. In the example below, not only people on escalators or moving walks will be tracked as objects, but parts of the escalator or moving walk can be tracked as well.

## Lighting and shadow

As with any task involving cameras and optics, lighting quality is very important. A camera should be placed in such a way that it does not receive direct light from any source and is not subject to lens flare. The ideal situation for tracking is consistent lighting, with minimal effects of shadows and reflections. Entrance doors facing strong sunlight can pose serious problems for tracking performance, as they will throw strong moving shadows as they are opened and closed.

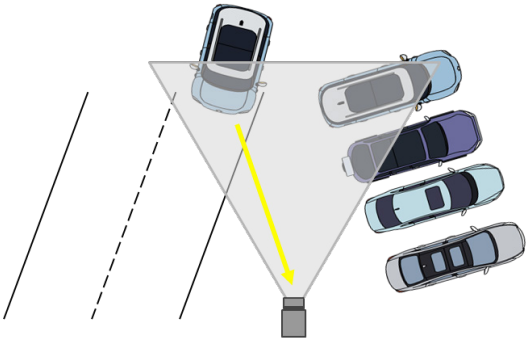


The thick shadow of a shaking tree may make false detection.

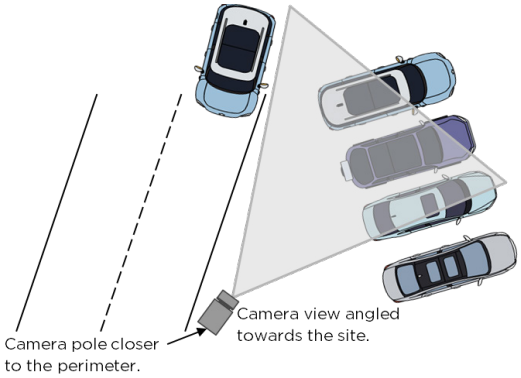
In general, tracking will be better for indoor scenarios when under artificial lighting. However, one should avoid, if possible, placing cameras too close to fluorescent lights particularly if the light source is close to the camera viewing axis. Light can strike the dome of the camera and reflect directly into the lens, which can create visual artifacts such as banding in the image. Position the camera so that there is not a direct light path from the fluorescent tubes to the camera dome. If that is not possible, make sure to maximize the distance between the tube and the camera.

## Night Performance

When using the IVA cameras at night, the environment will need to be properly lit via external lights, or the camera should be equipped with IR LEDs. Every camera should be installed so it does not receive any direct light from any source (includes the vehicle's headlights). This means pointing at the traffic moving away from the camera. Variations in lighting should be minimized when possible. The IVA engine's night performance depends on the camera's performance and the scene's lighting. If the camera image is clear and moving objects have good contrast against the background, the IVA engine will work very well. Dark areas where the moving objects have low contrast reduce the effectiveness of the IVA engine in detecting and tracking objects.



Headlights glare can cause view issues.




Camera's view adjusted to compensate.

## Raindrop, Snow, and Insects Obstruction

Environmental factors such as rain, snow and insects can cause object detection and tracking problems for the IVA engine and in severe cases, these can cause false alarms. For optimal results, it is best to avoid raindrops or snowflakes on the camera faceplate. If possible, mount the camera under the roof overhang where the camera can get some protection. Regularly scheduled cleaning of the camera to keep its dome clear of any environmental obstacles is also recommended.

Raindrops on the lens or dome.

Spider webs in front of the camera lens.

## For more information

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