

Face Recognition Requirements

Face Recognition

- We transform your cameras into intelligent machines capable to identify any person of interest.
- Search through archive footage by name rather than spending hours watching boring records.

The Face Recognition feature allows you to identify persons using video stream from your cameras. Recognized faces are compared with the pre-defined database and for every match a record is added to the archive. This record consists of: time and date of recognition, name of the recognized person, confidence level, camera ID and links to the corresponding video archive files. Using this information user can quickly review and access specific footage from end user portal.

To achieve reliable face recognition, it is required to properly place and set up the camera, enable and adjust the motion detection on the camera. Any of the camera modules that generates motion event can be used and the best option (simple motion detection, line crossing, intrusion, etc.) will depend on the specific scene conditions and camera positioning.

Requirements and recommendations

- When choosing a camera, it is recommended to select models that allow you to **control image settings** such as **shutter speed, frame rate, and bit rate** manually or semi-automatically (when you can set a range of min and maximum parameters for the camera).
- The best camera placement is at an entrance checkpoint or at a doorway where the persons of interest are required to pass. The camera must be installed on the face level or at a small angle slightly higher than typical person height in order to ensure the best view of the faces of the entering people. Also, ensure that at least part of the typical path that person takes when walking near the camera is directly towards the camera, ideally persons should be watching in the camera at least briefly. Positioning attention signs or blinking light bulb just over the camera can draw attention and ensure that every person looks into camera.



Lighting considerations

- Person's face must be adequately illuminated preventing over or under exposure in the picture. Avoid areas where the person's face will be illuminated by direct sunlight, or scenes with high contrast: like indoors near big windows, or long corridors with one light source at one end, places with constant changes in illumination due to automatic lights or upon door opening. Uniform and constant illumination of the faces to be recognized is required for reliable recognition. There must be no strong light sources shining from above, from below, or from the side, creating the sharp shadows and change of lighting on the different parts of a face.
- If the camera has to be installed against the light sources, a bright object of a background (for example, the Sun behind the entrance door) the camera exposure (or brightness) should be set to be above the default (automatic) value overexposing background to ensure that the face in the frame becomes lighter and more natural in color. Also note that some features of the cameras (WDR, Backlight compensation, Highlight compensation, etc.), typically result in blurry frames; so it is recommended to disable these features.

Good camera positions

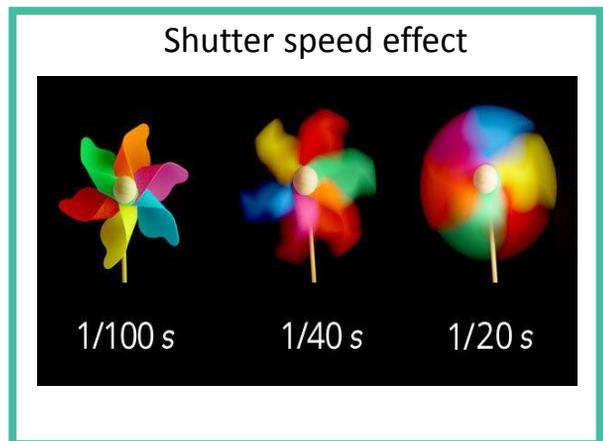


Bad camera positions



Minimum Camera Requirements

- The **camera definition and the lens** must ensure that person's face is at least **80 pixels** across when passing under the camera, for a more reliable recognition **150+** pixels is recommended. For low resolution cameras this means that person walk closer to the camera or a zoom lens must be used. For training images at least 150 pixels is required.
- The **camera frame rate** must be no less than **10 fps** (frames per second).
- The camera must have a capability of exposure adjustment to avoid getting blurry images of the passing people. **Minimum shutter speed** should be **limited to 1/60** at most, **recommended is 1/100** of a second or faster. The priority between the shutter speed and the aperture must be given to the shutter speed, in some models this is controlled by sharpness/smoothness settings, sharpness should be given a priority. That means that it is preferable to get a darker image than a blurred one. Depending on the camera manufacturer this setting can be called "Allow low shutter" or the limitation of the "maximum exposure" set this to 1/60 or less. The cameras without this capability will result in a blurry image that may look better in motion, but stop frames will be blurry decreasing accuracy of face recognition or even making it impossible to recognize a person. The increased sharpness on the camera leads to the significant visual noise, that results in false triggering of the motion detector, to avoid this provide a better illumination at the camera location.



Note: usage of the **H.264 codec** with high compression or large interval between the key frames may lead to the "tailing effect" of the moving objects in the resulting image. To overcome this set a higher bitrate in the camera settings and reduce the interval between the key frames.

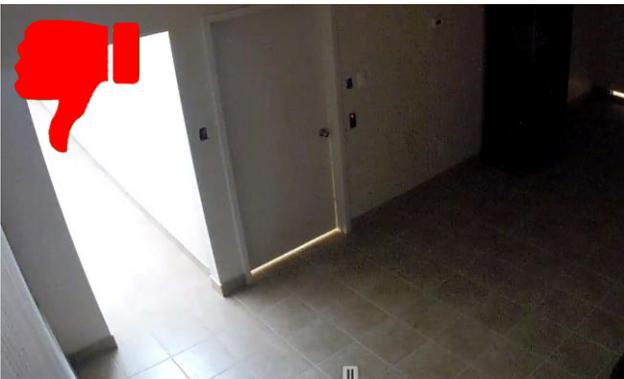
Examples



Excellent camera position, correct illumination and high traffic area. This camera will provide the best recognition results.



Good illumination but camera is positioned too high. No recognition will be possible unless person will be instructed to look into camera when passing under it.



Camera is too high, lighting condition are poor and change depending on people presence. Recognition would be poor and unreliable.



Camera position at an angle to the main traffic path and there is a strong back lighting. Recognition will be almost impossible.

Examples



Good position of camera at entrance but bad illumination conditions.
Recognition would be almost impossible.



Good illumination conditions but camera is positioned in low traffic area.
Only persons working in this room will be recognized.



Excellent position at main entrance and camera placement is at the best heights
Illumination can be improved, strong side lighting.
During sunny days faces might be overexposed resulting in poor recognition rates.



Good position of camera in hallway but wrong type of lenses used, resulting in faces that are less than required minimum of 80 pixels.
Low pixel count on the faces makes recognition impossible.