Camlytics Service 3.X.X
SPECIFICATIONS

Overview

Camlytics Service is an on-premises Windows software that connects to local or remote IP or web cameras for video analytics on different classes (people, vehicles, faces) and subclasses (vehicle type - bike, car, van, truck, bus, van; face type - gender, age) of objects. Camlytics Service is a part of Camlytics Cloud Solution.

Video streams are processed in real time. Generated metadata events (*Line crossed*, *Zone joined*, etc.) are pushed to the remote Camlytics Cloud server for aggregation and reporting.

Key benefits

Modular architecture

Leverage of Windows processes (each video channel works as a single process), no Windows sign in required.

No bandwidth impact

Only metadata is passed over network, tolerant to unstable, low bandwidth internet.

Live view and recent events UI

For easier configuration: set up lines and zones and see the analytics events generated in real time for configuration fine tuning locally.

Detection profiles

There are different object detection algorithms suitable for different use cases.

AI profiles: *AI people, AI vehicles & people, AI faces*. Based on a machine learning model.

Non-AI profiles: *Overhead* family (used for overhead cameras), *Tilted* family (used for tilted cameras). Based on background extraction.

Overhead Camera

Tilted Camera

Find the comparison between the two kinds of profiles in the table below.

	Classes of objects to detect	Accuracy	Classification capability	Performance
AI profiles	Only people, vehicles, faces	Up to 98%	Human, bike, car, van, truck, bus, face age/gender	20 ms/frame
Non-AI profiles	All moving objects	Overhead: up to 92% Tilted: up to 80%	None	2 ms/frame

In general case the AI profiles are preferable due to a much higher accuracy, fewer false detections due to shadows, sun, etc., however it has higher demand for the hardware (see requirements below).

Hardware requirements

Hardware requirements vary significantly depending on the detection profile used. Here is the comparison of max supported video channels with standard resolution (tested on a machine with discrete graphics card and minimal frame decoding load ~1% CPU/channel).

CPU, RAM	AI profiles	Non-AI profiles
Intel Xeon, 16GB RAM	20-40+ channels	40-80 channels
Intel I7, 16GB RAM	7-15 channels	25-35 channels
Intel I5, 8GB RAM	5-10 channels	17-25 channels
Intel I3, 8GB RAM	3-6 channels	10-20 channels
Intel Celeron/Atom, 4GB RAM	not supported	3-7 channels

AMD processor requirements are similar.
Minimal CPU requirement for running the AI profiles is support of AVX2.
There is no general dependency on GPU, however discrete graphics is recommended if maximum number of channels per machine is intended, because of much faster video decoding/playback.

OS requirements

Windows OS: 7, 8, 10, 11, Server. Both 32 bit or 64 bit are supported by non-AI profiles. Only 64 bit OS is supported by AI profiles.

Camera requirements

Model
Any webcam model is supported. Any IP camera with RTSP streaming capability is supported. Support of ONVIF is not required but recommended for easier camera discovery.

Resolution
Any resolution is supported, but lower resolutions (360p or similar) are preferable (but the frame width and height must not be lower than 256 pixels). If a camera is used for face/gender/age detection (*AI faces* profile), the recommended resolution is 720p or 1080p.

Tilt angle
Overhead profile: 0-20 degrees. *Tilted* profile: 20-70 degrees. *AI people & vehicles* profile: 20-90 degrees, *AI people* profile: 0-90 degrees, *AI faces* detection profile: 80-90 degrees.
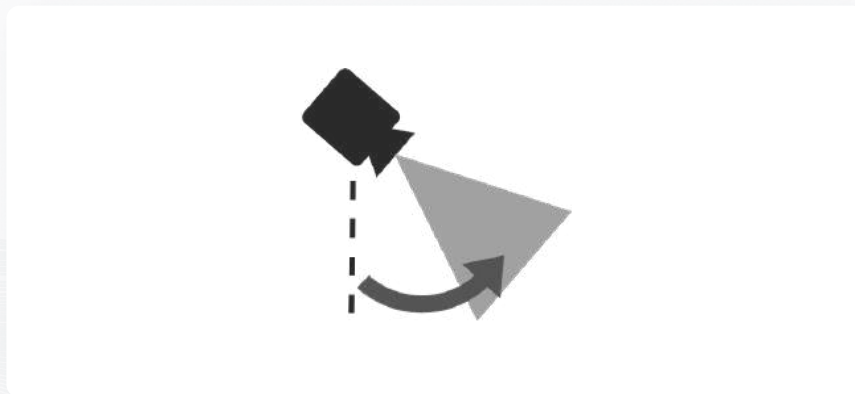
Installation height
Camera installation height strongly depends on the properties of the camera lens (wide angle/narrow angle), so a general recommendation would be to adjust the installation height according to the minimal object size recommendations. Estimate the minimal detectable object size as a relative to the size of the frame.

Minimal detectable object size for AI profiles
Vehicles with front or back view must have a minimal pixel width of 4% of frame width. For example, if a frame size is 1280x720 then you would need a vehicle width to be 50 pixels or more to be reliably detectable. Vehicles with a side view must have a minimal pixel width of 10% of frame width.
Humans must have a minimal pixel width of 3% of frame width.
Faces must have a minimal pixel width of 4% of frame width.

Minimal detectable object size for non-AI profiles
Minimal object size depends on the calibration marker size (can be changed in the channel settings), but absolute minimum for any moving object is 3% of frame width.