# sightcorp

DeepSight Toolkit Camera Recommendations

The camera that you choose can make a huge impact on the accuracy of your results depending on the environment that you want to analyze. Areas with a **strongly lit background** (overexposure), or areas with **low lighting** (underexposure) are common speedbumps in the Toolkit set up process. A useful tool for less than ideal lighting environments is a WDR (Wide Dynamic Range) camera, also known as HDR (High Dynamic range), however, this should be considered a last resort.

To help you choose the ideal camera in these scenarios, we have tested a few popular options from Logitech - The **Logitech BRIO**, **Logitech C920**, and **Logitech C525** cameras, with the **BRIO** producing the best results as seen in the following images:
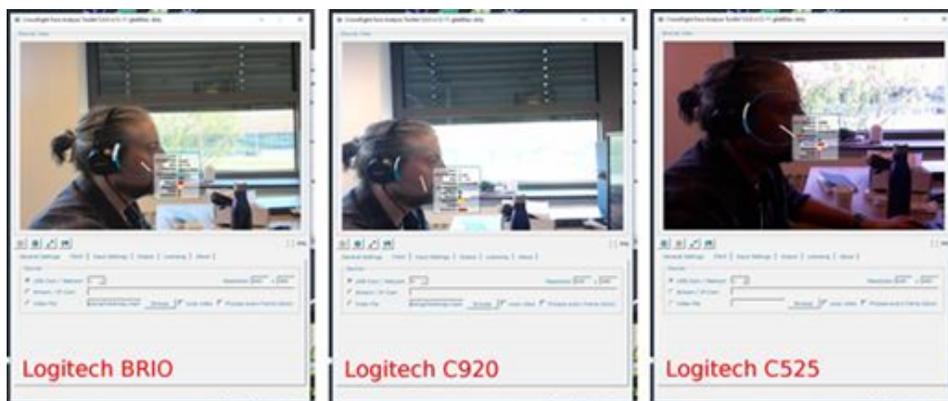
Strong back-light   **Poor lighting**
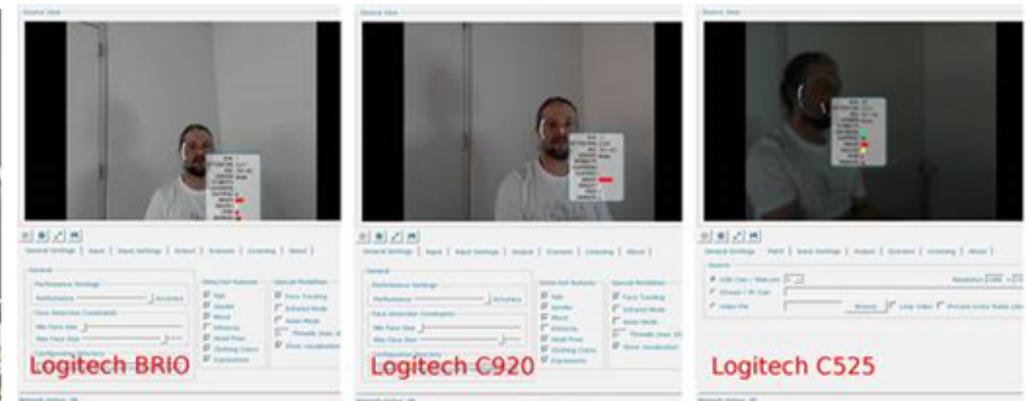
There are many different camera types on the market that work with the Toolkit, but to make your decision easier, below is a list with a few preferred models per industry that we and our clients use frequently:

Digital Signage:

Logitech HD Pro Webcam C920

Logitech webcam BRIO 4K Ultra-HD

UP HD camera

DOOH:

AXIS F Series cameras

AXIS F1015

Hikvision Covert Network Camera

Retail:

AXIS FA Series cameras

AXIS FA4115 Dome

Hikvision Pro Series cameras
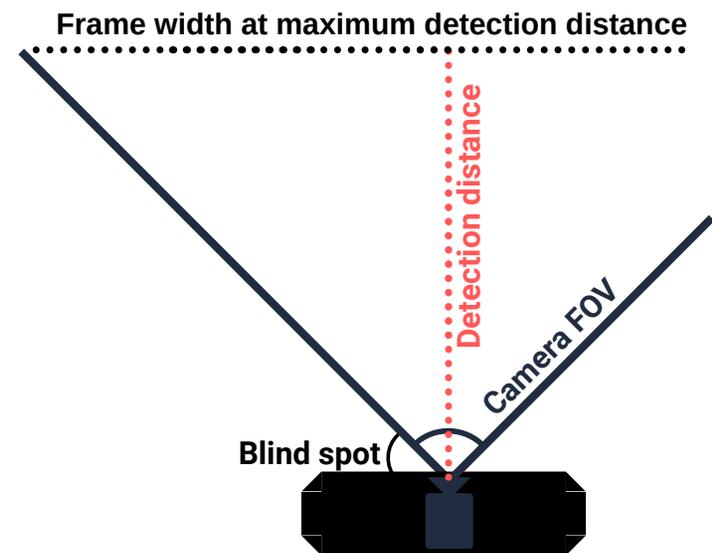
Outdoor:

ELP WDR Dual Lens 1080P USB Camera

E-Con Systems See3CAM_CU20

AXIS F1005-E

NOTE: For analysis that requires detection distance above 5 meters we suggest using a camera with FOV below 60° instead of a wide FOV lens.

Different cameras can produce different detection distances based on resolution and field of view (FOV). Below you can see maximum detection distance for each camera and corresponding FOV.

Maximum detection distance refers to the distance from camera (vertical line) and maximum width refers to the size of detection area (horizontal line).

Camera	FOV	Max Distance	Max Width
UP HD	95°	6.5 m	14.2 m
Logitech C920	90°	6 m	12 m
Logitech BRIO 4K	82°	5.5 m	9.6 m
Axis FA4115 Dome Sensor Unit	55°	9.5 m	9.9 m
Axis FA4115 Dome Sensor Unit	99°	5 m	11.7 m

Frame width at maximum detection distance

Detection distance

Camera FOV

Blind spot

NOTE: The above tests were performed on live video using 1920x1080 resolution running on UP Squared with Intel ATOM x7-E3950 processor.

DeepSight Toolkit - Face detection distance

DeepSight Toolkit			
UP HD Camera			
Resolution	**Max Distance**	**Max Frame Width**	**Min. Face Size (width)**
1920 x 1080	6.5 m	14.2 m	36 pixels
1280 x 720	6.5 m	14.2 m	23 pixels
800 x 600	6.5 m	15.3 m	14 pixels
640 x 480	7 m	15.3 m	12 pixels

DeepSight Toolkit			
Logitech BRIO			
Resolution	**Max Distance**	**Max Frame Width**	**Min. Face Size (width)**
1920 x 1080	5.5 m	9.6 m	34 pixels
1280 x 720	5.5 m	9.6 m	26 pixels
800 x 600	7 m	12.2 m	16 pixels
640 x 480	7 m	12.2 m	13 pixels

DeepSight Toolkit - Face detection distance

DeepSight Toolkit			
Logitech C930			
Resolution	**Max Distance**	**Max Frame Width**	**Min. Face Size (width)**
1920 x 1080	6 m	12 m	36 pixels
1280 x 720	6 m	12 m	25 pixels
800 x 600	6.5 m	13 m	15 pixels
640 x 480	6.5	13 m	12 pixels

DeepSight Toolkit			
Axis FA4115 Dome			
Resolution	**Max Distance**	**Max Frame Width**	**Min. Face Size (width)**
1920 x 1080 (99 FOV)	5 m	11.7 m	34 pixels
1920 x 1080 (55 FOV)	9.5 m	9.9 m	37 pixels
1280 x 720 (99 FOV)	5 m	11.7 m	25 pixels
1280 x 720 (55 FOV)	10 m	10.4 m	24 pixels
800 x 600 (55 FOV)	10+ m	10.4 m	18 pixels
640 x 480 (55 FOV)	10 m	10.4 m	13 pixels

DeepSight Toolkit - Face detection distance

DeepSight Toolkit			
HikVision Bullet (103 FOV)			
Resolution	**Max Distance**	**Max Frame Width**	**Min. Face Size (width)**
1920 x 1080	5 m	12.6 m	39 pixels
1280 x 720	4.5 m	11.3 m	24 pixels
800 x 600	N/A	N/A	N/A
640 x 480	5 m	12.6 m	15 pixels

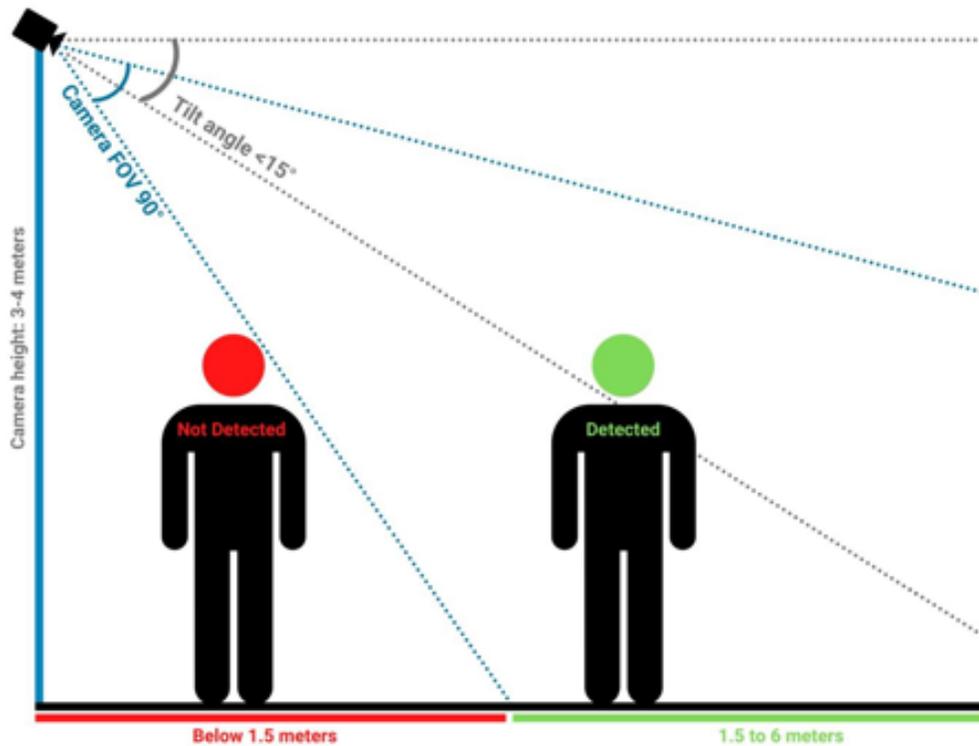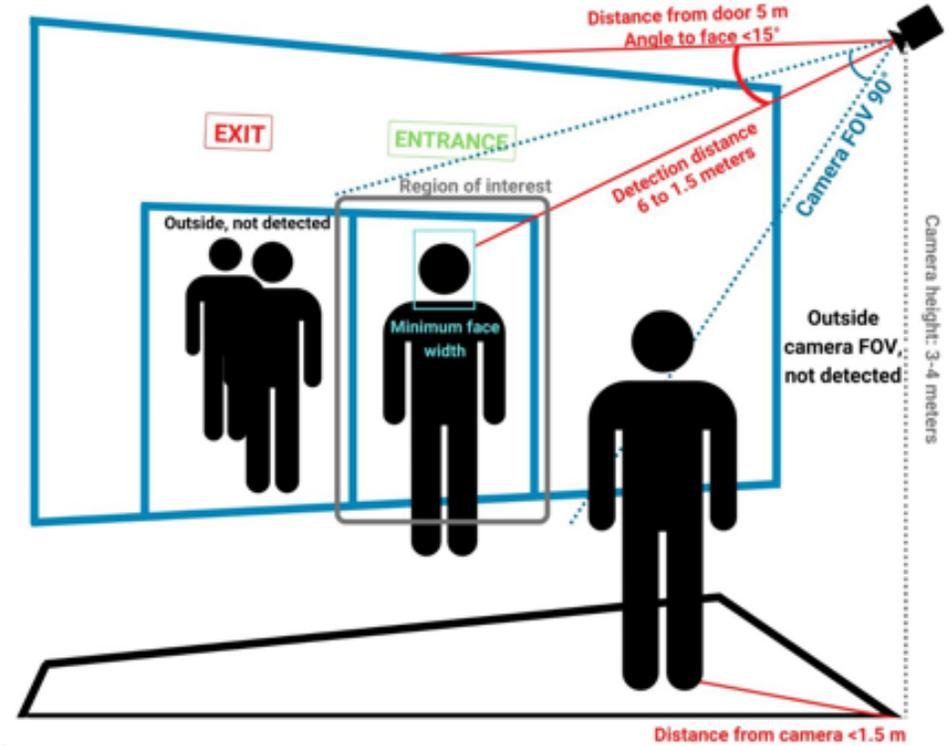| DeepSight Toolkit			
HikVision Dome (109 FOV)			
Resolution	**Max Distance**	**Max Frame Width**	**Min. Face Size (width)**
1920 x 1080	4 m	11.2 m	40 pixels
1280 x 720	4.5 m	12.6 m	29 pixels
800 x 600	N/A	N/A	N/A
640 x 480	5 m	14 m	14 pixels

Retail Scenarios

Figure 1

Figure 2

Camera positioning is an important part in **detecting store customers** accurately and aggregating meaningful data

Position the camera above the exit looking in, to avoid capturing people outside the store

Explore the Toolkit functions that enable you to aggregate more relevant data:

- Minimum / maximum face size
- Region of Interest (ROI)

Digital Signage Scenarios

For digital signage applications, the camera is usually placed on the top of a screen which is placed more or less at the **eye level** of consumers. This is also the ideal scenario for our face analysis software. There are two general scenarios; people walking towards a screen and people walking past a screen.

Scenario 1
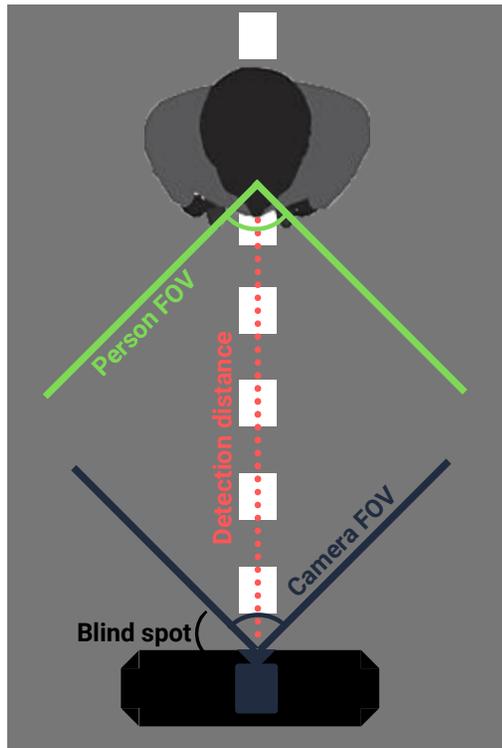
Scenario 2
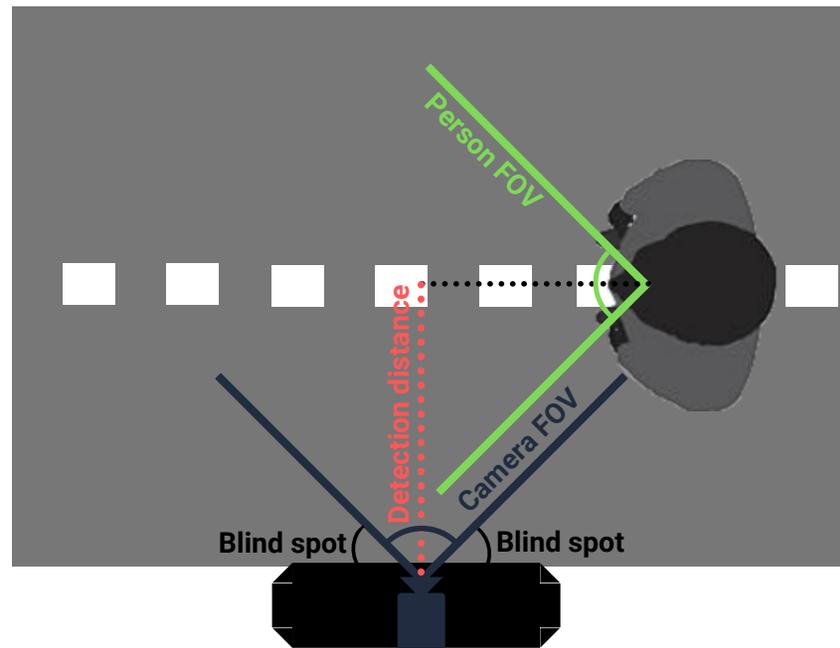
Attention tracking for Digital Signage explained

In order to count the number of views and measure their attention time, we have developed a **dynamic function** that adjusts the 'Viewing' angle based on the distance from the camera rather than using a hard coded threshold for all detections.

This results in much higher accuracy for **'People count', 'Viewer count'** and **'Impressions count' metrics**, which all crucial for the Digital Signage industry.

OTS	Impressions	Views
6 m / 55° / Detection distance	6 m / 30° / Detection distance	6 m / 8° / Detection distance — 3 m / 15° / Detection distance
Detected, not viewing	Detected, not viewing	Detected, viewing — Detected, viewing