

Better safe than sorry! Face detection with UI-3013XC

The USB 3 uEye XC is the first USB 3.0 industrial camera from IDS with integrated face detection. With this feature, the picture detail is selectively searched for human faces, which are automatically found and captured. The camera identifies head-like outlines, eyes and even different viewing directions.

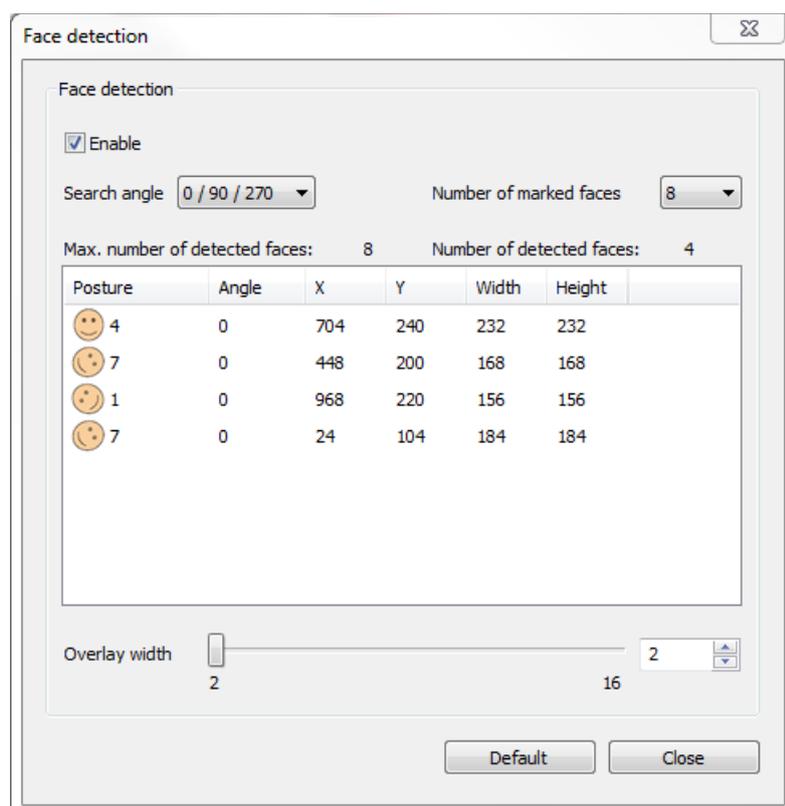
Background

The term face detection (also face recognition) refers to technologies which detects automatically faces in a digital image. Typical features like head shape, geometry of the facial features (e. g. eyes) and skin color are taken into account.

Aggravating factors for automatic face detection are partly covered faces, head posture (turned away vs. faced), or a busy, highly structured background.

Activating face detection

Open the UI-3013XC in uEye Cockpit. Select the “View > Face detection” menu entry to open the face detection dialog.



Face detection dialog

Check the “Enable” option to activate the face detection. The detected faces are displayed in the list. The faces are sorted by size. Note that the face detection is only active in live mode but not in snapshot mode.

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Setting the search angle

Via the "Search angle" dropdown list you define a facial orientation angle if the camera is turned for example by 90°.

Upside-down faces are not detected. You have to turn the camera or enable the mirror function in order to detect upside-down faces.

An angle of 0° corresponds to the 12 o'clock position, 90° to the 15 o'clock position and so on. The face detection marks only those faces which correspond to the set search angle.

Define markings in the image

Via the "Number of marked faces" dropdown list, you can preset the maximum number of faces that should be marked in the camera image. The detected faces are marked with an overlay box. The box marking the largest face detected has a red border; the boxes for the other faces have white borders. At the bottom of the dialog, you set the frame width in pixels via the "Overlay width" slider.

List of detected faces

Besides the entries "Max. number of detected faces" and "Number of detected faces", you can see the maximum number of faces that the current camera model can detect or how many faces have been found in the image

In the list of detected faces, the viewing direction is indicated in the "Posture" column by a symbol. The camera can distinguish up to 9 different viewing directions or postures of the head.

0	1	2	3	4
				
5	6	7	8	
				

In the "Angle" column, the orientation of the found face is displayed. In the columns "X", "Y", "Width", and "Height" the position and size of the face is displayed.

The position and size coordinates of the detected faces depend on the image resolution. The coordinate (0, 0) is at the top left corner of the image.

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Application areas

The USB 3 uEye XC can find up to 8 faces per image and is recommended for applications including video communication, access control, monitoring of machine and plant operators, or advertising impact analysis (e.g. assessing viewer response to display windows).

Summary

In addition to 13 megapixel resolution and autofocus, the UI-3013XC is a USB 3.0 industrial camera which also offers a variety of special functions that are otherwise known from popular consumer cameras. Especially the face detection opens up numerous application possibilities.

With the uEye API function “is_FaceDetection” or the uEye .NET class “FaceDetection” you can program the face detection.

For further information on setting and programming the face detection, refer to the uEye manual at <http://en.ids-imaging.com/manuals-ueye.html>.

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