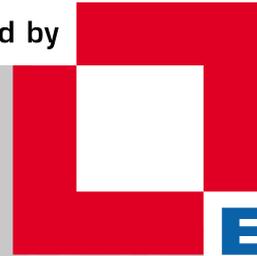
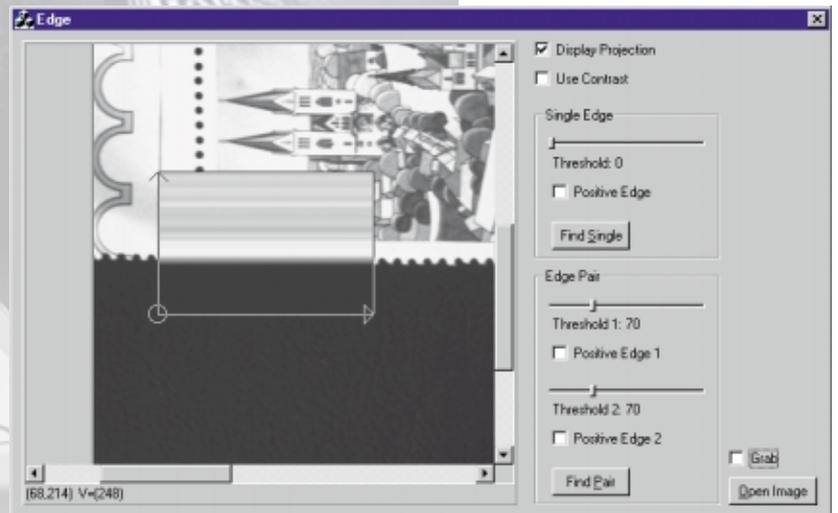


▶ Edge

powered by



COMMON VISION
BLOX



**Image Processing
for Edge Detection**

► Edge

ImageProcessing is a collection of image processing libraries which can be used in many applications. All functions are fully Common Vision Blox compatible, i.e. they can be used on any Common Vision Blox image. Also supported is the area and density principle of Common Vision Blox, together with the coordinate system. Since Common Vision Blox is an expanding concept, the Image-Processing libraries are also dynamically expandable. This documentation relates to the Common Vision Blox Edge library for edge detection. Two function groups are currently described in Edge:

- Functions for calculating projections of any orientation
- Functions for detecting edges

Both function groups primarily serve to perform edge-oriented image processing tasks. Within the edge detection functions it is possible to use either a gray value threshold method or a contrast method. The search direction is determined by the position and orientation of the scan window.

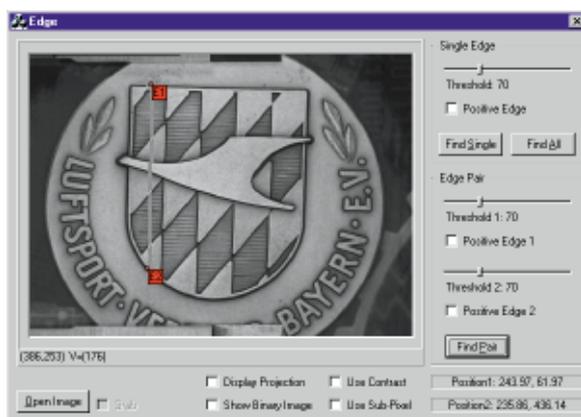
► Functions for Edge Detection

- Function finds the first edge
- Function searches for an edge pair
- Function searches for all edges within an area (also with subpixel accuracy)

► Methods of Detection

Two methods of detection are used in the Common Vision Blox Edge library:

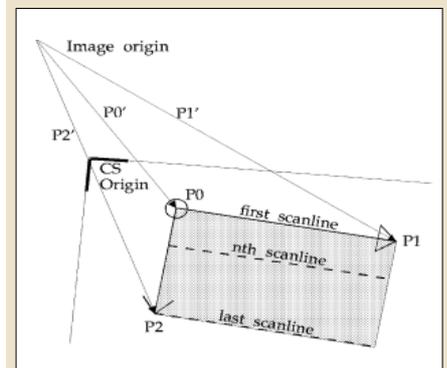
- Threshold Method
- Contrast Method



Projections in Edge

The direction of the projections is predetermined by the definition of the area. In Common Vision Blox an area is defined by the three points P0, P1 and P2. The points generally describe a parallelogram of any orientation which is usually reduced to a sometimes rotated rectangle. The columns are summed in the direction P0-P1:

- P0 The origin point of the parallelogram. The task is performed in relation to it.
- P1 The corner that defines the direction of scan lines in the parallelogram.
- P2 The corner that defines the search direction in the parallelogram.



Edge Detection

Once the projection has been calculated, it is possible to commence edge detection. An edge is defined as a transition from black to white (positive edge) or white to black (negative edge).

Subpixel Accuracy

In the Edge library we use the simplest and fastest method to calculate the position of an edge with subpixel accuracy: linear interpolation. This enables the position of an edge to be determined to a precision of approx. 1/10th of a pixel. The quality of the frame grabber used is of importance here. If possible, the images should be recorded using a pixel-synchronous frame grabber. This type of synchronization precludes PLL (Phase Lock Loop) errors.