NAME

xil_edge_detection – detect edges within an image

SYNOPSIS

#include <xil/xil.h>

void xil_edge_detection (XilImage *src*,
XilImage *dst*,
XilEdgeDetection *edge_detection_method***);**

DESCRIPTION

This function detects edges within an image using the method specified by the *edge_detection_method* parameter. *src* is the source image handle. *dst* is the destination image handle.

edge_detection_method is an enumeration type that specifies the edge detection algorithm to be used in the operation. Currently, the only available method is XIL_EDGE_DETECT_SOBEL, which uses the following kernels:

Vertical			Horizontal		
-0.5	0.0	0.5	-0.5	-1.0	-0.5
-1.0	0.0	1.0	0.0	0.0	0.0
-0.5	0.0	0.5	0.5	1.0	0.5

The XIL_EDGE_DETECT_SOBEL method performs two convolution operations on the source image, using the vertical filter to detect vertical edges and the horizontal filter to detect horizontal edges. This yields the intermediate images *a* and *b.* It then squares pixel values in *a* and *b,* yielding intermediate images *c* and *d.* To form the final destination image, it takes the square root of *c* + *d.* The convolution operations duplicate the source-image edges during the convolution, similar to using the XIL_EDGE_EXTEND edge detection method on the **xil_convolve**(3) function.

ROI Behavior

An ROI (region of interest) is used as a read mask for key pixels in the source image and as a write mask in the destination image. The edge detection operation may access data outside a source ROI as long as the key pixel remains inside.

ERRORS

For a complete list of XIL error messages by number, consult Appendix B of the *XIL Programmer's Guide.*

EXAMPLES

This example performs edge detection operation on *src* image using sobel algorithm, and writes the result into *dst.*

```
XilImage src, dst;

xil_edge_detection(src, dst, XIL_EDGE_DETECT_SOBEL);
```

NOTES

Source and destination images must be the same data type and have the same number of bands. The images need not have the same width and height. This operation cannot be performed in place.

SEE ALSO

xil_convolve(3)