NAME

xil_tablewarp, xil_tablewarp_horizontal, xil_tablewarp_vertical – warp an image with a user-specified warp table

SYNOPSIS

#include <xil/xil.h>

void xil_tablewarp (XilImage *src*,
XilImage *dst*,
char* *interpolation*,
XilImage *warp_table*);
void xil_tablewarp_horizontal (XilImage *src*,
XilImage *dst*,
char* *interpolation*,
XilImage *warp_table*);

void xil_tablewarp_vertical (XilImage *src*,
XilImage *dst*,
char* *interpolation*,
XilImage *warp_table*);

DESCRIPTION

These functions warp an image with the specified warp table. *src* is the source image handle. *dst* is the destination image handle. *interpolation* is a string that specifies the interpolation to be used. The supported interpolation types are nearest (nearest neighbor), bilinear, bicubic, and general. *warp_table* is a handle to an *XilImage* structure that describes the backward mapping from a pixel in the destination to a pixel in the source.

A warp table is an XIL image whose pixel values define the backward mapping from a pixel in the destination to a pixel in the source. The warp table is applied at the origin of the destination image. The source origin is then added to the backward mapping position specified by the warp table. A warp table must have the datatype XIL_SHORT, though it can be used to warp images of any data type. The XIL_SHORT value is interpreted as fixed point wth 12 bits value and 4 bits of precision.

The warp table for **xil_tablewarp** () is a 2-banded image where the bands specify the displacement in *x* and the displacement in *y.* The warp table for **xil_tablewarp_horizontal** () and **xil_tablewarp_vertical** () is 1-banded and specifies the displacement in the *x* and *y* directions, respectively.

ROI Behavior

Because a warp table is technically an XIL image, it can have a defined region of interest (ROI). However, an ROI is meaningless in a warp table and is therefore ignored.

ERRORS

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

EXAMPLES

For this example, a warp table is created to produce the same effect as translation. This example translates a 100 x 120 block from src origin to the right and down with offset (26.0, 37.0) using bilinear interpolation.

```
XilSystemState State;
XilImage src, dst, warp_table;
float values[2];

warp_table = xil_create(State, 100, 120, 2, XIL_SHORT);
/* multiply offsets by 16 because of 12 bit values with 4 bit precision */
values[0] = 26.0 * 16;
values[1] = 37.0 * 16;
xil_set_value(warp_table, values);

xil_tablewarp(src, dst, "bilinear", warp_table);
```

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_set_origin(3), **xil_set_pixel**(3), **xil_set_value**(3).