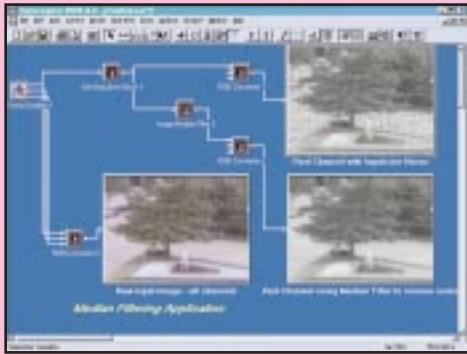


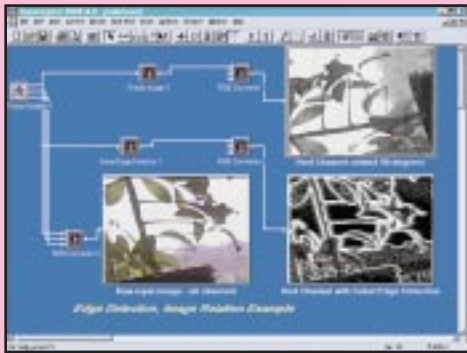


Examples



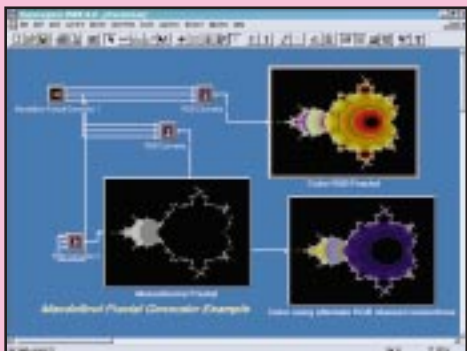
Median Filtering Example

This worksheet provides an example of working with an image by splitting the image into its component color channels, RGB, and then adding impulsive noise to the image, and using a median filter to remove the noise from that channel.



Edge Detection and Image Rotation

This example worksheet shows an image which has its red channel rotated 90 degrees and also sent through a Sobel Edge Detector. Note the ease at mixing and working with the RGB color planes.

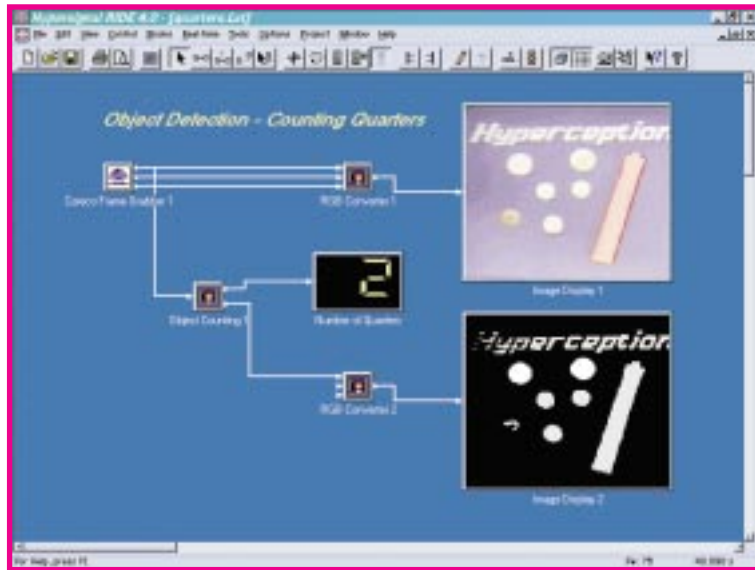


Mandelbrot Fractal Example

The Digital Image Processing Library supports fractal generation directly. A Mandelbrot Generator and a Chaos-based Fractal Generator are included in this library for a variety of fractal-based experiments.

Digital Image Processing Library

Optional Block Function Library for Hypersignal® Block Diagram/RIDE™



Object Detection example using Image Processing Library

Image processing applications may be created and proof-of-concept research and development may be performed with this digital image processing library.

Overview

The Digital Image Processing Library available for Hypersignal Block Diagram and RIDE provides a specific set of image-related simulation blocks for image processing research and development. Adding these specialized image functions to Hypersignal Block Diagram/RIDE is a great way to get the image processing engineer up and running in no time at all!

Capabilities

The Digital Image Processing Library uses of a plane-based format to allow for monochrome and color processing of images using Red, Green, and Blue (RGB) planes of data; this format also has the additional advantage of allowing image data to be treated as matrix data with corresponding matrix operations possible on the image. Conversion routines between one-dimensional data and two dimensional data are included for performing a wide variety of image processing algorithms, using a mix of image processing specific functions and conventional one-dimensional functions.

Getting images into and out of Hypersignal Block Diagram/RIDE may be accomplished through reading and writing image files. In addition to raw pixel data formats, standard Windows bitmap formats are supported for the reading and writing of image files. A recent addition to the Image Library is the inclusion of a frame grabber function for direct capture of images from standard video cameras and capture cards. Due to the open software architecture of Hypersignal Block Diagram/RIDE, custom or proprietary image capture, or frame grabber hardware may be supported easily by creating a new block function for the hardware.

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Digital Image Processing Library

Partial List of Functions

Add Constant

Add a constant to an image

Clip Image

Clips an image by comparing with two specified threshold levels

Flip Image

Flips an image

Image Negative

Creates a negative image

Image Square

Produces the square of an image

Image Square Root

Calculates the square root of an image

Threshold

Examines an image and outputs zero if the image element is not greater than the specified threshold

Zoom Image

Zooms an image based on the specified parameters

Multiply by Constant

Multiplies an image by a constant

Multiply Image

Multiplies two input images

Add Image

Adds two input images

Subtract Image

Subtracts two input images

Rotate Image

Rotates an image

RGB Display

Displays an image in RGB format

Isotropic Edge Detector

Detects the edges of an image using the Isotropic method

Laplace Edge Detector

Detects the edges of an image using the Laplace method

Prewitt Edge Detector

Detects the edges of an image using the Prewitt method

Roberts Edge Detector

Detects the edges of an image using the Roberts method

Sobel Edge Detector

Detects the edges of an image using the Sobel method

Point Detector

Detects the isolated points on an image

Horizontal Line Detector

Detects the horizontal lines on an image

45 Degree Line Detector

Detects the 45 degree lines on an image

Vertical Line Detector

Detects the vertical lines on an image

135 Degree Line Detector

Detects the 135 degree lines on an image

AVI Read

Reads an AVI file

Bitmap Read

Reads a Windows Bitmap file

Bitmap Write

Writes a Bitmap to a disk file

Maximum Filter

Performs a maximum filter on an image

Median Filter

Performs a median filter on an image

Minimum Filter

Performs a minimum filter on an image

Moving Average Filter

Performs a moving average filter on an image

Order Statistical Filter

Performs an order statistical filter on an image

Exponential Transform Histogram

Performs the exponential transform histogram on an image

Histogram

Calculates the histogram of an image

Histogram Equalization

Performs a uniform histogram on an image

Log Transform Histogram

Performs the log transform histogram on an image

Brightness

Measures the average intensity of an image

Contrast

Measures the variance of an image

AND Two Images

Performs the logical AND function on two input images

OR Two Images

Performs the logical OR function on two input images

XOR Two Images

Performs the logical XOR function on two input images

AND Constant

Performs the logical AND function on an image with a constant

OR Constant

Performs the logical OR function on an image with a constant

XOR Constant

Performs the logical XOR function on an image with a constant

Add Gaussian Noise

Adds noise with a Gaussian distribution to an image

Add Impulsive Noise

Adds impulsive noise to an image

Add Laplacian Noise

Adds noise with Laplacian distribution to an image

Add Uniform Noise

Adds noise with a uniform distribution to an image

Object Counting

Detects and counts objects

Object Tracker

Tracks an object(s) in an image

Sharpening Filter

Performs a sharpening filter on the input image

Mandelbrot Fractal Generator

Generates a Mandelbrot Fractal with specified parameters

Chaos Game Generator

Generates a fractal based on the chaos game

RGB Converter

Convert an RGB signal to the specified format

Image Delay

Delay a specified number of images

Sprite

Generates a Sprite image

Ordering Information

Part Number:

HSWN2515 - Image Processing Library

**Optional Block Function Library for Hypersignal
Block Diagram/RIDE**

Hyperception

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