Subject: Re: using convol with 2D image and 1D kernel
Posted by David Fanning on Sat, 29 Nov 2003 19:17:41 GMT
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Bruce writes:

> Hello, I was wondering what the convol(array,kernel) function does
> when it is given a 2D array and a 1D kernel ?
>
> I have run through "Example 2" for the digital_filter() function,
> in which the 2D array "mandril" is convolved with the 1D array
> "filter" (in Reference Volume 1):
>
> mandril = bytarr(512,512)
> ...
> mandril = float(mandril)
> filter = digital_filter(0.0,0.1,50,10)
> filt_image = convol(mandril,filter)
>
> I can see that the image is smoothed, but did convol()
> 1) take the 1D kernel of size 1x21 and run it over the image, where
> the result at each point is only influenced by points in the
> horizontal direction,
> OR
> 2) take the 1D kernel and transform it into some 2D kernel of
> dimension 21x21, and run that over the image, where the result is
> now influenced by points in both the horizontal and vertical
> directions ?

If you do a "Help, filter" after the DIGITAL_FILTER step,
you see that the filter is a 21-element 1D array. So
the convolution is performed as in 1 above.

You can also see this because there will be black
bands on the left and right edge of the image, since
the example did not use the EDGE_TRUNCATE keyword.
Had the filter been applied two-dimensionally, you
would have seen a band around the entire image.

Cheers,

David
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