Subject: Re: Does CONVOL convolute
Posted by thompson on Tue, 25 Feb 2003 17:21:09 GMT
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condor@biosys.net (Big Bird) writes:

> David Fanning <david@dfanning.com> wrote in message
news:<MPG.18c41ee199cd0d0b989afb@news.frii.com>...

>> Setting CENTER=1 or /CENTER is the same as leaving the CENTER
>> keyword off. (Don't ask!)

> Oy, I'll ask anyways: Who's grand idea was that?

>> If you want to perform convolution in
>> the "strictly mathematical" sense, you must explicitly set CENTER=0.
>> Is this what you were after:
>>
>> IDL> print,convol(tt,k, center=0)
>> 0.000000 0.000000 0.000000 0.000000 0.000000
>> 0.000000 0.000000 0.000000 0.000000 0.000000
>> 0.000000 0.000000 1.00000 0.000000 0.000000
>> 0.000000 0.000000 0.000000 0.000000 0.000000
>> 0.000000 0.000000 0.000000 0.000000 0.000000

> Huh? No, that isn't what I was after either.

> Maybe I'm thinking something completely wrong here somewhere but if my
> array is

> 1 0 0
> 0 0 0 ...
> 0 0 0
> .
> .

> and my convolution kernel is

> a b c
> d e f
> g h i

> then I would expect the convolution to be

> e f 0
> h i 0 ...
> 0 0 0

> .
> .

> At least for a symmetric kernel (I'd have to think about an
> unsymmetric one). ...

Actually, for an asymmetric kernel, the answer should be

e d 0
b a 0
0 0 0

What I usually do in this sort of situation is to embed my array within a bigger array, to get around the edge effects within these IDL routines. Thus, I would make my array

0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 1 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0

of which the center 3x3 portion is the real array. The convolution with the kernal would then be

0 0 0 0 0 0 0
0 i h g 0 0 0
0 f e d 0 0 0
0 c b a 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0

And taking the center 3x3 portion gives the expected answer.

William Thompson