
Subject: Does CONVOL convolute

Posted by [condor](#) on Mon, 24 Feb 2003 19:01:00 GMT

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OK, I'm kinda puzzled here -- can someone explain the following to me (IDL 5.5 on linux if it makes a difference)?

Let there be a simple symmetric 2D array and a simple symmetric kernel
-- then the result is exactly what I expect:

```
IDL> tt = fltarr(5,5)
IDL> tt[2,2] = 1
IDL> print,tt
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  1.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
IDL> k = float([[1,2,1],[2,4,2],[1,2,1]])
IDL> print,k
  1.00000  2.00000  1.00000
  2.00000  4.00000  2.00000
  1.00000  2.00000  1.00000
IDL> print,convol(tt,k)
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  1.00000  2.00000  1.00000  0.00000
  0.00000  2.00000  4.00000  2.00000  0.00000
  0.00000  1.00000  2.00000  1.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
```

But leaving the kernel alone, and just making the original array
unsymmetric, I get something entirely unexpected:

```
IDL> tt = fltarr(5,5)
IDL> tt[0,0] = 1
IDL> print,tt
  1.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
IDL> print,convol(tt,k)
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  1.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
  0.00000  0.00000  0.00000  0.00000  0.00000
```

0.00000 0.00000 0.00000 0.00000 0.00000

Huh?

I get the same results with or without the /center keyword to convol.

I had some code that relied on the fact that convolution of a non-zero element in tt cannot result in a zero element in tt if the convolution kernel is non-zero everywhere. Well, so much for that idea. Can someone tell me what I'm thinking wrong here?
