Subject: Selective Convolution
Posted by James[2] on Tue, 13 Jul 2010 18:32:31 GMT
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Hi Everyone,

I am getting some painfully slow execution times dominated by running CONVOL on three-dimensional arrays. I'm working with a sparse data set of blood vessel images. I'm only interested in calculating the field _inside_ the blood vessels, so the vast majority of the array is empty space that I don't care about. I'd like to instruct CONVOL to only calculate convolutions inside the blood vessels, but when I try to do this:

```
;example, simpler version of what I'm doing
x[nonzero] += r*convol(x[nonzero], pdvkern)
```

IDL complains, and rightfully so: the subscripted array is now one-dimensional, and it doesn't make sense to convolve it by a 3D kernel.

My first thought was setting the empty space to NaN values, but the NaN keyword to CONVOL does the opposite of what I want - it replaces NaN values with the convolution of real values, and ignores NaN values in the convolution of "good" elements. I don't ever want to replace a NaN value with a convolved value, but I would like to treat NaN values as zeroes when calculating the convolution of "good" elements.

So, I'm thinking I might have to write a C routine for selective convolution. Any other ideas for how to overcome this?

Thanks,
James Preiss