Subject: Re: simple array math question
Posted by JD Smith on Mon, 27 Jan 2003 18:20:02 GMT
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On Fri, 24 Jan 2003 12:29:11 -0700, Craig Markwardt wrote:

> "Pepijn Kenter" <kenter@tpd.tno.nl> writes:
>> "Kenneth Bowman" <k-bowman@null.tamu.edu> wrote in message
>> news:k-bowman-4D0582.08381824012003@news.tamu.edu...
>>> In article <b0rce6$23c$1@news.surfnet.nl>,
>>> "Pepijn Kenter" <kenter@tpd.tno.nl> wrote:
>>>
>>>> And does any IDL-wizard know a similar trick to average each
>>>> row/column
>> of
>>>> a?
>>>> i.e. to replace the following lines:
>>>>
>>>> result = dblarr(3)
>>>> for i = 0, 2 do result[i] = mean(a[*,i])
>>>
>>> That's an easy one:
>>>
>>> result1 = TOTAL(a, 1, /DOUBLE)/n1
>>> result2 = TOTAL(a, 2, /DOUBLE)/n2
>>>
>>> where n1 and n2 are the sizes of the first and second dimensions,
>>> respectively.
>>>
>>> Ken Bowman
>>
>> Thanks, but what I actually meant was a way where you can replace the
>> mean function by any, arbitrary function. I forgot about the dimension
>> parameter of the TOTAL function, so my example was a bad one. Sorry.
>
> "Arbitrary function"? No. In more recent versions of IDL, quite a
> number of built-in math functions have the ability to specify one or
> more dimensions over which the function is to be applied. I have a
> function called CMAPPLY, which may be useful with older versions of IDL,
> and does many of those same things. One thing it can do is apply an
> arbitrary function, but it won't necessarily be speedy. JD Smith also
> has a DLM which did a lot of these kinds of things.
>

My REDUCE DLM has been entirely superseded with v5.6 by builtin
methods. I think the list currently stands at:

MAX
MEAN
MEDIAN
MIN
MULTIPLY (PRODUCT)
TOTAL

And of course REFORM and REBIN (obviously).

You can use these primitives to build up the moments along any dimension... see MOMENT and moment.pro. In fact, I think just sticking an _EXTRA in all the totals in that file, and touching up the argument checking would buy you a REDUCE-capable MOMENT as well (not sure why RSI didn't do this for us). Note that sometimes you use a keyword (DIMENSION) and sometimes you use a vector argument.

What we don't have is an APL style function-as-argument mechanism, with the attendant abilities to thread and collaps function over any dimension of arbitrarily sized arrays. But IDL's argument rules are far too loose to permit this anyway.

Good luck,

JD
