Subject: Re: row calculation in a 2D array
Posted by Martin Schultz on Tue, 25 Aug 1998 07:00:00 GMT
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Jonas wrote:
>
> thanxalot (both Kevin and David), it helped. I wasn't avare of the function
> "TOTAL", still being a newbie and all.
>
> This was kind of a special example since total could do all the work. What
> if I would like to do another calculation where total is not applicable...
> in other words:
> is there generally an easy way to perform the same calculation over all the
> (sub-)rows in a in a 2D array?
>
> I do not have such a problem at the moment, but I assume it is likely that I
> will encounter it in the future (at least if i don't ask now :-)).
>
> sincerely
> Jonas Svensson

Well, if you want to compute averages first over rows 0:3, then 4:7,
then 8:11, etc. you may not get around using a loop. Although, in some
cases you could try your luck with reform() and a subsequent call to
Kevin's average routine (which I like very much: THANKS!). But this is
certainly prone to errors...

Martin.

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Dr. Martin Schultz
Department for Earth&Planetary Sciences, Harvard University
109 Pierce Hall, 29 Oxford St., Cambridge, MA-02138, USA

phone: (617)-496-8318
fax : (617)-495-4551

e-mail: mgs@io.harvard.edu
Internet-homepage: http://www-as.harvard.edu/people/staff/mgs/
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Subject: Re: row calculation in a 2D array
Posted by Jonas on Tue, 25 Aug 1998 07:00:00 GMT

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sincerely
Jonas Svensson

Subject: Re: row calculation in a 2D array
Posted by Kevin Ivory on Tue, 25 Aug 1998 07:00:00 GMT

Jonas wrote:
> I want to perform the same operation on each sub-row in a 2D array.
> Say I want to calculate the mean of element 4-7 in each row of a 10x10
> array, and store the result in a 10 element-vector, where each element holds
> the mean from the respective row
>
> how is this done the smartest way, without using time-consuming loops?

A general anwser is not easy, but your example is. You need routines that only work on certain dimensions of multidimensional matrices.
For calculating the mean I have exactly what you need: It is a one-liner (with a few comments) named 'average'. Here is an example:

```
IDL> ten_2d = bindgen(10,10)
IDL> print, average(ten_2d(4:7,*), 1)
     5.50000      15.5000      25.5000      35.5000      45.5000      55.5000
     65.5000      75.5000      85.5000      95.5000
```

Hope this helps,
Kevin
--
Kevin Ivory Tel: +49 5556 979 434
Max-Planck-Institut fuer Aeronomie Fax: +49 5556 979 240
Max-Planck-Str. 2 mailto:Kevin.Ivory@linmpi.mpg.de
D-37191 Katlenburg-Lindau, GERMANY http://www.gwdg.de/~kivory2/

```
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; Time-stamp: <average.pro  Thu Apr  3 16:00:48 MET DST 1997>

function average, array, dim, _extra=_extra
;+
; calculates the average value of an array (all arguments as in 'total')
; arguments
;   array     array to be averaged, any type except string
;   dim       dimension over which to average (see 'total' documentation)
; keywords
;   _extra    all keywords passed to 'total'
;-
  if n_elements(dim) eq 0 then dim = 0
  return, total(array, dim, _extra=_extra) / (total(finite(array), dim)>1)
end
```

Subject: Re: row calculation in a 2D array
Posted by David Kastrup on Tue, 25 Aug 1998 07:00:00 GMT
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"Jonas" <jonas_2@hotmail.com> writes:

> Probably a damn simple one, but anyway:
>
> I want to perform the same operation on each sub-row in a 2D array.
> Say I want to calculate the mean of element 4-7 in each row of a 10x10
> array, and store the result in a 10 element-vector, where each element holds
> the mean from the respective row
>
> how is this done the smartest way, without using time-consuming loops?

```
mean = total(array[4:7,*],1)/4
```

--
David Kastrup   Phone: +49-234-700-5570
Email: dak@neuroinformatik.ruhr-uni-bochum.de   Fax: +49-234-709-4209
Institut fï¿½r Neuroinformatik, Universitï¿½tsstr. 150, 44780 Bochum, Germany

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Subject: Re: row calculation in a 2D array
Posted by Alex Schuster on Wed, 26 Aug 1998 07:00:00 GMT
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Jonas wrote:

> This was kind of a special example since total could do all the work. What
> if I would like to do another calculation where total is not applicable...
> in other words:
> is there generally an easy way to perform the same calculation over all the
> (sub-)rows in a in a 2D array?

Calculating the average of each row could be done by matrix
multiplication:

```
a = findgen( 10, 10 )
b = reform( fltarr( 10 ) + 1, 1, 10 )
average = reform( b # a / 10 )
print, average

     4.50000      14.5000      24.5000      34.5000      44.5000
54.5000
     64.5000      74.5000      84.5000      94.5000
```

Other things would be more difficult, though, and sometimes you just
cannot avoid loops.

Alex

--
Alex Schuster Wonko@weird.cologne.de PGP Key available
alex@pet.mpin-koeln.mpg.de

Subject: Re: row calculation in a 2D array
Posted by Jonas on Wed, 26 Aug 1998 07:00:00 GMT
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Martin Schultz skrev i meddelandet <35E326AF.41C6@io.harvard.edu>...

> Well, if you want to compute averages first over rows 0:3, then 4:7,
> then 8:11, etc. you may not get around using a loop. Although, in some
> cases you could try your luck with reform() and a subsequent call to
> Kevin's average routine (which I like very much: THANKS!). But this is
> certainly prone to errors...
>
> Martin.
>
>
What I meant was, doing all the calculations on the same sub-row in each
row. The question then is: Is there a general way to access all these
subrows if the calculation to be performed is not including "TOTAL".
Jonas
