Subject: Re: Problem array subscripting
Posted by Craig Markwardt on Mon, 16 Aug 1999 07:00:00 GMT
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GRI <dibeas@etsit.upm.es> writes:
>
> I have a little problem I want to solve using array subscripting (if
> possible), but I haven't been able to do it without using a FOR
> statement:
>
> I have a 3D array (dimX, dimY, n_images), which represents a time-series
> of images.
>
> I have a masking image (dimX, dimY), from wich I extract some points I
> am interested in (a ROI) with the command WHERE.
>
> I could then change the one dimensional subscripts returned by WHERE
> into two vectors, that give me the X and Y coordinates of the points.
>
> What I want to do is:
>
> index= INDGEN(n_images)
> result= ARRAY[X, Y, index],

First of all, I would argue that using a FOR loop in this situation is acceptable. Why? Because you are still vectorizing the majority of the computation at the image level. The extra computational overhead of the FOR loop for a few images will be small.

That said, if you *really* want to vectorize, then I think you need to take a different approach. Array subscripting with index lists can get tricky if you mix with other forms of subscripting at the same time. The WHERE command, operated on a two dimensional array, gives a *one* dimensional list of array indices. Therefore, it's usually best to refer to your data the same way, ala REFORM.

If MASK is (NX x NY) and ARRAY is (NX x NY x N_IMAGES) then this should work.

```
wh = where(MASK EQ 1, n_pix)  ;; One-dimensional array
array = reform(array, nx*ny,  n_images, /overwrite)
result = array(wh, *)
array = reform(array, nx, ny, n_images, /overwrite) ;; Revert to old dims.
```

It may look ugly, but it's pretty fast since the REFORM(...,/OVERWRITE) operates on the data in place. The dimensions of RESULT are (N_PIX x N_IMAGES) where N_PIX is the number of pixels selected by WHERE.

Good luck,

Craig

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