Subject: dimension problem in matrix multiplication
Posted by Benjamin Hornberger on Tue, 13 Apr 2004 18:29:12 GMT
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Hi all,

I have a 3-dimensional data array "image" (n_cols, n_rows, n_data) where cols and rows denote pixels in a 2d-image and data are different data values for each pixel. Now I would like to perform a matrix multiplication so that the data vector (n_data elements) for each pixel is multiplied by a 2-dimensional matrix "c".

If I try result = image # c, I get an "incompatible dimensions" error since obviously IDL doesn't know that the 3rd dimension in "image" is the vector I want to multiply by the matrix, and I want that operation done for every pixel. Playing around with * and 0:n_data-1 subscripts didn't help so far.

I could imagine a for loop to loop through all pixels, but does anybody know a way how to avoid the loop? What I did before I found out about matrix multiplication operators was doing the matrix multiplication manually:

```
result = fltarr(n_cols, n_rows, n_data) ;; initialize
for i=0, n_data-1 do begin
  for j=0, n_data-1 do begin
    result[*, *, i] = result[*, *, i] + c[j, i] * image[*, *, j]
  endfor
endfor
```

But I would like to avoid the for loops and use IDL's matrix multiplication capabilities.

Any hints?

Thanks,
Benjamin