Subject: Rebin/Reform/Histogram
Posted by Mrunmayee on Tue, 21 Sep 2010 12:01:01 GMT
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1. I have 2 vectors t2 and t2 of size nv each.
2. I have 2 matrices, w1 and w2, of sizes nvxn1 and nvxn2 resp. (Following IDL notation so nv cols and n1/n2 rows).

3. I need to take each row of w1, multiply (element-wise) to each row of w2. So effectively I have n1*n2 number of multipled rows.

4. Each of these rows needs to be matrix-multiplied by (t1-t2)^2. So that I want to end up with n1xn2 matrix (say SF).

5. Independently I have another n1xn2 matrix of distances (D). I need above matrix as a function of distances from distance matrix. That is, SF[i,j] is value at D[i,j]. I want D histogrammed, put SF in the same bins by using reverse_indices and get average value of SF corresponding to each distance bin.

6. Then I need to repeat the process for a total of 524 t's pair-wise. So above t1, t2 are chosen at random from 524 t's just to start the problem. For each of these, n1/n2 can vary from ~100 to ~1500.

So far:

```
SF = FltArr(n1,n2)
dt = (t1-t2)^2
for i = 0, n1-1 do begin
   w = rebin(w[*,i], nv, n2) ; Makes nvxn2 matrix
   p = w*w2                  ; Performs number 3 above.
   SF[i,*] = dt # p
endfor
```

Improvization (?):

```
temp = reform(w1, nv, 1, n1) ; Copies each row on separate planes.
w1_3d = rebin(temp, nv, n2, n1)
```

But I am not aware how I can use this (trying to eliminate the for loop, you see) for the step calculating 'p' and hence SF.

So questions:
1. Is there a way I can eliminate the for loop? I am not THAT averse to them anyway. But I would like to know anyway.
2. How can I scale the problem to 524*523/2 number of pairs of t's?

I tried to be consise and explanative at the same time, so do ask me if I have goofed up.

Thanks.
(And for someone who is using IDL for, like n years, I am resorting to rebin/reform/histogram only NOW. So to get to this for loop, it took me 3 weeks. I don't think my collaborator is very happy with that... I just think I have casted my solutions in IDL mould and they are nice. I would go in details of the physics/statistics behind it, but maybe later.. Let's at least get the ball rolling.)

Thanks.
