Subject: Re: Vector comparison.
Posted by Chris Lee on Thu, 20 Nov 2003 10:09:23 GMT
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In article <3fbbc86c$1@rutgers.edu>, "hunter" <elhunter@rci.rutgers.edu>
wrote:

> Hello,
> These seems to be a fairly simple problem but I'm having difficulty
> coming up with an elegant solution.
> Let's say I have two vectors of type integer: A=[0,1,3,3,3,6,7,9,9]
> B=[3,7]
> I would like to design a function which returns the indices of all the
> elements of A which appear in B.
> i.e.
> C=get_match(A,B)
> should return
> C=[2,3,4,6]
> The simplest answer (I believe) is to loop through B and use the where
> command. I just wonder if there is a way to do this without useing the
> loop, as (in reality) the length of B may be very large. I suppose
> another possibility is to use the histogram command with reverse_indices
> set. But I think this would still require me to use a loop. Although it
> may be faster since I would only have to call histogram once. Any
> thoughts?
> Thanks,
> Eli
>

How much memory do you have.... (or, to put it another way, loops really
aren't that bad when n_elements(array) > big_number :)

anyway, the memory hogging non loopy answer.

a=[0,1,3,3,3,6,7,9,9]
b=[3,7]

.....

function get_match,a,b

;needs some up-to-date version of IDL, 5.4 I think.

na=n_elements(a)
nb=n_elements(b)

;some checks go here to make sure the world won't explode, an exersice

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;for the reader.

reb_a=[na,nb]
ref_a=[na,1]
reb_b=[na,nb]
ref_b=[1,nb]

a_temp=rebin(reform(a, ref_a),reb_a)
b_temp=rebin(reform(b, ref_b),reb_b)

c_temp=a_temp-b_temp
a_temp=0
b_temp=0

w=where(c_temp eq 0, count)

c_temp=0
;memory...

if( count gt 0) then c=w mod na
if( count eq 0) then c=-1

return, c
end

-----

if they are guaranteed to be integer (non-integer histogramming implies a
fuzzy match doesn't it?) and B is very big :-

hist=histogram(a,reverse_indices=r)

n=n_elements(b)

if(n eq 0) then c=-1

if(n ge 1) then c=r[r[b[0]-min(a)]:r[b[0]+1-min(a)]-1]

;does this work if b is not an array, something changed between 5.3 and
;5.5 but I forget.

if(n gt 1) then for i=1, n-1 do begin
c=[c,r[r[b[i]-min(a)]:r[b[i]+1-min(a)]-1]]
endfor

;this last bit should work..... This still has the loop of course but
It does grab all of the indices (unlike a UNIQ approach for example) and
uses less memory ( O(na) instead of O(na*nb) )
```

..

I think there must be a better way (a more IDL way), but inspiration hasn't hit yet.

Chris.
