
Subject: Re: Was: Index... Now: Vectorize, huh?

Posted by [Stein Vidar Hagfors H\[1\]](#) on Thu, 05 Apr 2001 21:11:38 GMT

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"Pavel A. Romashkin" <pavel.romashkin@noaa.gov> writes:

> Craig and Med,

>

> I appreciate it! This is exactly what I needed. My problem is the lack
> of matrix operations knowledge. Craig's generic solution is exactly what
> I expected to see from Craig :-)

>

> By the way. We all are big on vectorizing things in IDL. But look at this:

>

> IDL> a = test(2000)

> 1.4968959

> IDL> a = test(2000, /v)

> 3.2976190

>

> where TEST is below. I don't even mention that /VEC causes extremely
> high memory usage and gets totally out of hand on my system if S > 5000
> or so.

>

> .*****

> pro test, s, vec=vec

> start = systime(1)

> x = findgen(s)

> a = fltarr(s, s)

> if keyword_set(vec) then begin

> a = sqrt(transpose(rebin(x, s, s))^2 + rebin(x, s, s)^2)

Now, this is a bit unfair! First (but least), you're generating a useless "a = fltarr.." for the vector case. Then, you're doing everything in the wrong order (exploding the array first, then squaring it), and you're also using a transpose when it is not necessary:

```
x2 = x^2 ; This could be used to speed up your "nonvectorized" code as well
a = sqrt(rebin(reform(x2,1,s,/overwrite), s, s) + $
         rebin(reform(x2,s,1,/overwrite), s, s))
```

(But still, non-vectorizing code is 2x faster (with the $x^2 = x^2$ optimization): Running through the large arrays several times is the killer, I suspect. It may be architecture dependant, I presume).

But then, your "nonvectorized" code *is* vectorized (x is a vector), and it's generally accepted that avoiding loops don't really buy you much when operating on very large units. It's an intriguing example, though!

And for e.g. $s = 200$ the vectorized code is slightly faster..

```
> endif else begin
> for i = 0, s-1 do begin
> a[0, i] = sqrt(x^2 + i^2.)
> endfor
> endelse
> print, systime(1) - start
> ;return, a
> end
> .*****
> ,
```

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