Subject: Re: Cholesky factorisation
Posted by Pavel Romashkin on Tue, 22 Feb 2000 08:00:00 GMT
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I can't help hearing some sarcasm regarding IDL in David McClain's postings.
Why is that? After all, accepting computer's numerical precision is a matter of
faith, too, especially in life-critical applications Raytheon is developing. I
find using upper-level language like IDL very convenient, and availability of
"lower-level" tools like pointers is nice. C is great, but so is IDL I think.
If we don't trust functions written by others, we might as well wright
everything ourselves in C...

Cheers,
Pavel

David McClain wrote:

> I use the method shown in Numerical Recipes, 2nd Ed. Coding in C and being
> clever allows it to run in under 3 microsec on a 6x6 array, which is a size
> commonly needed by one of our analyses. Doing it externally allows for both
> speed and error handling as you would want it. It also guarantees
> correctness, as verified by you, the coder; something that RSI would have
> you accept as a matter of faith...
>
> David McClain, Sr. Scientist
> Raytheon Systems Co.
> Tucson, AZ

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Posted by David McClain on Tue, 22 Feb 2000 08:00:00 GMT
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David McClain, Sr. Scientist
Raytheon Systems Co.
Tucson, AZ

Peter Scarth <p.scarth@mailbox.uq.edu.au> wrote in message
news:01bf7cda$4593eba0$eb2f14ac@default...
> Howdy all,
> I'm trying to determine if a symmetric matrix is positive-definite. If

this
> sounds like gobbdlygook you might like to stop reading here. If the
> idl2matlab translate-o-matic existed, it would probably need to know about
> this to translate the handy \ (mldivide) operator. There a number of tests
> for positive-definiteness and the one I'm looking at is to attempt
cholesky
> factorisation of the matrix. IDL's CHOLDC procedure halts and returns
> CHOLDC: choldc failed (note that matlab can return a value to flag a
> failure in the decomposition).
> The metho that I an using to get the decomposition looks something like
> this:
>
> ----------
> pro choldc2,a,p
> sa=size(a)
> nd=sa[0] & m=sa[1] & n=sa[2]
>
> ; Some initial tests.....
> ; .....
>
> p=fltarr(n)
> for i=0,n-1 do begin
> for j=i,n-1 do begin
> sum=a(j,i)
> if i gt 0 then sum=sum-total(a(0:i-1,i)*a(0:i-1,j))
> if (i eq j) then begin
> if (sum le 0) then begin
> p=-1
> return
> endif else p(i)=sqrt(sum)
> endif else a(i,j)=sum/p(i)
> endfor
> endfor
> return
> end
> ----------
>
> it works ok, returns -1 in p if the method fails but only runs at 1/10 the
> speed of the built in version.
> Is it possible to vectorise this further, or has someone out there in
> cyberland found a more elegant solution to this problem already?
>
> Thanks,
>
>
> Peter Scarth
> Biophysical Remote Sensing Group
> The University of Queensland.

>