Subject: Re: limits of 'invert'
Posted by Foldy Lajos on Wed, 16 Nov 2005 18:01:33 GMT
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Hi,

as an example, run time for simple matrix multiplication is proportional to n 3 . For your sizes, this would give a factor of 10^6 . A 150x150 array can reside in the CPU cache, so add another 10 for the big array => 10^7 . If "immediate" = 0.1 s, then 10^7 * 0.1 s is about two weeks.

And if you run out of physical memory, swapping to disk can add another factor of 100 :-(

regards, lajos

>

>

>

On Wed, 16 Nov 2005, queiny wrote:

- > Dear IDL & Maths experts:
- > Is there a limit for the 'invert' or 'la_invert', program to calculate
- > the inversion of a square matrix, provided by IDL?

> When my matrix is 150x150, 'invert' return immediatelly, but when it is

- > '15000x15000', 'invert' runs for more than a day. I am wondering
- > whether it is in some infinite loop, or it simply needs that long.
- > What is the reasonable upper limit that 'invert' or 'la_inver' can
- > operate?
- > Thanks.
- >
- > Q
- _

_

Subject: Re: limits of 'invert'

Posted by K. Bowman on Wed, 16 Nov 2005 19:07:18 GMT

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In article <1132162119.050786.109730@g47g2000cwa.googlegroups.com>, "queiny" <queiny98@yahoo.com> wrote:

> Dear IDL & Maths experts:

>

- > Is there a limit for the 'invert' or 'la_invert', program to calculate
- > the inversion of a square matrix, provided by IDL?

>

- > When my matrix is 150x150, 'invert' return immediatelly, but when it is
- > '15000x15000', 'invert' runs for more than a day. I am wondering
- > whether it is in some infinite loop, or it simply needs that long.

>

- > What is the reasonable upper limit that 'invert' or 'la_inver' can
- > operate?

>

> Thanks,

>

> Q

Matrix inversion is an O(n^3) operation, so the second case should require ~100^3 times as long as the first, that is, ~10^6 times as long. (There are

~10^5 seconds/day.)

Also, storing a 15000 x 15000 array requires ~900 MB, so you may very well be swapping to disk, which will slow things down by another couple of orders of magnitude.

I suggest that you consult a good introductory numerical analysis book.

Cheers, Ken Bowman

Subject: Re: limits of 'invert'

Posted by queiny on Wed, 16 Nov 2005 20:16:20 GMT

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Thank Lajos and Ken! I do need to review the basic concepts.

This group provide much more help than just IDL..

Subject: Re: limits of 'invert'

Posted by Paolo Grigis on Thu, 17 Nov 2005 08:38:56 GMT

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queiny wrote:

> Thank Lajos and Ken! I do need to review the basic concepts.

You don't even need to buy expensive books, check out:

http://www.library.cornell.edu/nr/bookcpdf.html

it's all there in pdf format!

Ciao, Paolo

> This group provide much more help than just IDL..