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Topic: Diagonal-matrix multiplication and BLAS

Replies: 5 Last Post: Nov 19, 2004 7:35 PM

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[Tobias Wagner](#)

Posts: 14
Registered: 12/18/04

Re: Diagonal-matrix multiplication and BLAS

Posted: Nov 19, 2004 6:58 PM

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Tobias Wagner wrote:



> Hello,
> I need to do the following calculations with BLAS:
>
> $Q = A^T D A$
> $c = b^T D A$
>
> where A is a dense matrix, D is a diagonal matrix and b is a vector.


Meanwhile I found the solution myself.

I draw the root of D (as D is diagonal, the root L is simply the root of the diagonal). $D = L^T L$ so $Q = A^T L^T L A = (A L)^T (A L)$, which I then calculate with the routine dsyrk.


Runtimes for $n = 500$:
naive $Q_{ij} = \sum_k A_{ki} D_{kk} A_{kj}$: 2min 26s
ATLAS-BLAS with dsyrk: 6.3s

:-)

Date	Subject	Author
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11/19/04	 Re: Diagonal-matrix multiplication and BLAS	Peter Spellucci

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