

PBblas/ potrf

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IMPORTS

PBblas | PBblas.Types | std.BLAS | PBblas.internal | PBblas.internal.Types |
PBblas.internal.MatDims | PBblas.internal.Converted | std.system.Thorlib |

DESCRIPTIONS

FUNCTION potrf

<code>DATASET(Layout_Cell)</code>	<code>potrf</code>
<code>(Triangle tri, DATASET(Layout_Cell) A_in)</code>	

Implements Cholesky factorization of $A = U^{**T} * U$ if Triangulr.Upper requested or $A = L * L^{**T}$ if Triangulr.Lower is requested. The matrix A must be symmetric positive definite.

$$\begin{array}{|cc|} \hline A11 & A12 \\ \hline A21 & A22 \\ \hline \end{array} == \begin{array}{|cc|} \hline L11 & 0 \\ \hline L21 & L22 \\ \hline \end{array} * \begin{array}{|cc|} \hline L11^{**T} & L21^{**T} \\ \hline 0 & L22 \\ \hline \end{array}$$
$$== \begin{array}{|cc|} \hline L11 * L11^{**T} & L11 * L21^{**T} \\ \hline L21 * L11^{**T} & L21 * L21^{**T} + L22 * L22^{**T} \\ \hline \end{array}$$

So, use Cholesky on the first block to get L11. $L21 = A21 * L11^{**T} ** -1$ which can be found by dtrsm on each column block A22' is $A22 - L21 * L21^{**T}$

Based upon PB-BLAS: A set of parallel block basic linear algebra subprograms by Choi and Dongarra

This module supports the "Myriad" style interface, allowing many independent problems to be worked on at once. The A matrix can contain multiple matrixes to be factored, indicated by different values for work-item id (wi_id).

PARAMETER tri Types.Triangle enumeration indicating whether we are looking for the Upper or the Lower factor

PARAMETER A_in The matrix or matrixes to be factored in Types.Layout_Cell format

RETURN Triangular matrix in Layout_Cell format

SEE Std.PBblas.Types.Layout_Cell

SEE Std.PBblas.Types.Triangle
