GENERALIZATION OF CANNON'S MATRIX MULTIPLICATION ALGORITHM FOR PROCESSOR ARRAY EXCEEDING SIZE OF SQUARE MATRIX

Jozef Nagy

Institute of Informatics, Faculty of Mathematics, Physics and Informatics
Comenius University
Mlynská dolina, 842 48 Bratislava, Slovak Republic
nagy@ii.fmph.uniba.sk

Some already existing distributions for parallel matrix multiplication using a large processor array are generalized in this paper. A required size of a processor array is not smaller than a size of any matrix in multiplication $A \times B = C$. A large processor array is used to speed up time required for arithmetic operations. A generalization of Cannon's distribution for parallel matrix multiplication is proposed. We apply a commonly used technique for parallel computations: to divide, to distribute and to compute parallel. Multiplications and additions of matrix elements computed during Cannon's matrix multiplication are divided and distributed on free parts of a processor array. An elements' matching in Cannon's distribution is kept by distributed copies of matrix elements and by moves in blocks. We also discuss a size of a processor array and required additional communications. We describe an achieved speeding up of the proposed algorithm compare to Cannon's matrix multiplication. Ideas for arbitrary matrix sizes are offered.

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