Abstract

Chain multiplication of matrices is widely used for scientific computing. It becomes more challenging when there is large number of floating point dense matrices. Because, floating point operations take more time than integer operations. It would be interesting to lower the time of such chain operations. Now-a-days every multicore processor system has built in parallel computational power. This power can only be utilized when compatible parallel algorithms were used. So, in this work, a shared memory based parallel algorithms has been proposed to compute the multiplication of a long sequence of dense matrices. The algorithms have been tested with long sequence of matrices as input. The approach has been with 2×10^8 flops. The input matrix sequence length was typically varied from 2 to 30. Maximum number of processors used was eight (Eight core processor). Different parameters like speedup, efficiency etc. were also noted. It was concluded that the parallel algorithms could achieve approximately 90% efficiency at best case. The algorithms also showed improved scalability.

References

Chain Multiplication of Dense Matrices: Proposing a Shared Memory based Parallel Algorithm


- Czumaj, A; Parallel Algorithm for Matrix Chain Product and the Optimal Triangulation Problems (Extended abstract). STACS; 93 version. Supported in part by the EC Cooperative Action IC 1000 Algorithms for Future Technologies; and by the grant KBN 2-1190-91-01, Pages 1-12.


- D. A. Patterson, J. L. Hennessy; Computer Organization and Design: The
- T. Dash, T. Nayak, S. Chattopadhyay; Handwritten Signature Verification (Offline) using Neural Network Approaches: A Comparative Study. International Journal of Computer Applications. ISSN: 0975-8887, November; (accepted, in press)

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