Abstract

Parallel computing is a form of computation in which many calculations are carried out simultaneously, operating on the principle that large problems can often be divided into smaller ones, which are then solved concurrently. Now Graphics Processing Unit (GPU) has taken a major role in high performance computing for generic applications. Compute Unified Device Architecture (CUDA) programming model provides the programmers adequate C-Language like API's to better exploit the power of GPU. Data Mining has significant applications in various domains. Currently, these techniques cannot meet the requirement of applications with large scale databases in terms of computation and speed. Association Rules Mining (ARM) is one of the most widely used techniques in data mining and has tremendous applications. Apriori is the most influential ARM algorithm. It has been included in all the existing commercial and non-commercial data mining. This paper provides a parallel Apriori algorithm on GPU with CUDA and focuses on computation time compared with execution time of serial program in CPU.
References


4. Parallel Data Mining on Graphics Processors - By Wenbin Fang, Ka Keung Lau, Mian Lu, Xiangye Xiao, Chi Kit Lam, Philip Yang, Bingsheng He, Qiong Luo, Pedro V. Sander, and Ke Yang.

5. GPApriori: GPU-Accelerated Frequent Itemset Mining - By Fan Zhang, Yan Zhang, Jason Bakos - Published in IEEE International Conference on Cluster Computing, 2011.

6. High Speed Association Rule Mining using Apriori Based Algorithm for GPU - By D. William Albert, Dr. K. Fayaz and D. Veerabhadra Babu - Published in International Journal of Multidisciplinary and Current Research.

7. Frequent Itemset Mining on Graphics Processors - By Wenbin Fang, Mian Lu, Xiao, Bingsheng He, Qiong Luo.


11. CUDA by Example: An Introduction to General-Purpose GPU Programming - By Jason Sanders, Edward Kandrot.

12. Parallel Programming with CUDA - By Ian Buck.

13. Heterogeneous Parallel Programming (MOOC) - By University of Illinois

https://www.coursera.org/course/hetero

14. .Net Framework Programming

http://en.wikipedia.org/wiki/Association_rule_learning


17. Wikipedia, "Graphics Processing Unit",


20. NVIDIA Developer Zone

21. NVIDIA Developer Zone


23. CUDA Zone


25. NVIDIA Parallel For All Blog

Index Terms

Computer Science

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Keywords

Parallel Computing, GPGPU, GPU, CUDA, Data Mining, Parallel Apriori Algorithm