SMALL SCALE FOR PARALLEL PROGRAMMING

Sparse Matrix-Vector Product Kernel

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Contents

Abstract

The product of a sparse matrix and a vector was calculated both in parallel and sequentially. The parallel procedure was executed with two different technologies, Open Multi-Processing and Compute Unified Device Architecture. Sparse matrices were stored in two different formats, Compressed Sparse Row and Ellpack. Different procedures produced different effects, those effects were discussed and studied.

Table 1: Nomenclature

Matrix Rows	m
Matrix Columns	n

Introduction

Bidimensional matrices are often represented in a bidimensional array of values of **m** by **n** elements.

Problem definition

Numerical analysis

Procedures

Solution Design

Results & Discussion

Conclusions

References

[1] Raphael Yuster and Uri Zwick, *Fast sparse matrix multiplication*, Available at: <http://www.cs.tau.ac.il/~zwick/papers/sparse.pdf> [Accessed 28 March 2017]

[2] B. Neelima1 and Prakash S. Raghavendra, April 2012, *Effective Sparse Matrix Representation for the GPU Architectures*, Available at: <https://pdfs.semanticscholar.org/2d15/dd5d0975fff797397ad31059ec097b659e00.pdf> [Accessed 28 March 2017]

Appendices

Source Code