ABSTRACT

Sparse matrix-vector multiplication is the most important kernel in sparse matrix processing. Before processed, normally sparse matrix will be stored in a special storage scheme and one of them is Compressed Sparse Row. This storage sceme is able to represents a wide variety of sparse matrices efficiently that it has become the most popular storage scheme. Unfortunately, CSR implementation gives a poor performance on GPU because of uncoalesced memory accesses and lack of paralelism.

CSR-Adaptive is a method that could be an answer to the disadvantage of the previous CSR implementations. Whilst able to perform a coalesced memory accesses, CSR-Adaptive also able to maximize the parallel processing. The implementation achieves average speedup of 23.7x over the previous CSR implementations. This research will analyze the performance of CUDA-based CSR-Adaptive implementation on GPU.

***Keywords**: CSR-Adaptive, Sparse Matrix, CUDA, coalesced*