Lightweight compression algorithms for database systems supported by GPU devices.

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Graph DB

Applications

GPU used as a coprocessor or main processing unit. Possible different schemes of data transfer, from more to less intensive. Often large data sets.

Benefits:
- Better memory utilization
- Improve IO
- Fit more data

Timeseries DB

Graph Algorithm

GPU used as a coprocessor, data transfer for each query, simple data intensive operations. Without compression limited profit from the use of GPU.

OpenTSD-like queries:
- Acceleration
- Imprv. memory access
- Imprv. I/O
- Impr. fit more data

Table 1. Experimental data sets. The first group of columns shows for number of records, edges and storage size of each graph. The second group shows the size of graph before compression and after compression with corresponding compression ratio.

Graph 1. Advanced compression level of lightweight compression and compared results with baseline (baseline) and previous work (TEK) – our lightweight, PSI, PSI-TO – and stock implementation – PSI – scalability in the group. PSI, PSI-TO – GPU data.

Figure 1. Execution speedup of TS query (lower curve shows data transfer and compression, upper curve shows raw execution time after decompression). All data are benchmarks for vertex and edge set.