Abstract

There are serious problem for storage sparse matrix due to west of memory used for storage the non-zero values which represent more than 90% of sparse matrix. There are many algorithms suggested for solving this problem. A new storage method for large sparse matrices was presented in this paper based on quadtree. The suggested algorithm utilized the idea of quadtree to re-represent the sparse matrix in two vectors, which reduce the required memory space for storage sparse matrix. The suggested algorithm reduced the memory space required to store the zero values to more than 85%. The algorithm compared with many algorithms and it was more efficient than almost all the previous algorithms up to our knowledge. The current algorithm characterized by less space storage need, highly speed, and easy to implement.
- Tomáš Oberhuber, Atsushi Suzuki, Jan Vacata, 2011, "New Row Grouped CSR Format for Storing Sparse Matrices on GPU with Implementation in CUDA".

**Index Terms**

Computer Science Algorithms

**Keywords**

Sparse matrix quadtree compression decompression