Abstract
Fast data compression is gaining increasing importance in the recent times. Statistical compression methods and methods pertaining to textual substitution have been studied in great detail in the last few decades, however, the problem of compressing data at very high speeds with less compression trade-off still remains unsolved to a certain extent. General Purpose Graphic Processing Units (GPGPUs) are a powerful tool that allow large-scale parallel processing, owing to a large number of Streaming Multiprocessors. Recent studies on parallel methods for compression using textual substitution show that considerable speed-ups can be obtained by using the Lempel-Ziv-Storer-Szymanski (LZSS) [9] lossless data compression algorithm on GPUs. In this paper, a parallel, space-efficient compression algorithm using GPGPUs for LZSS compression, along with a dynamic variation of the Knuth-Morris-Pratt (KMP) string-matching algorithm [2] is presented. The algorithm splits the input data into disjoint data chunks and performs compression on each chunk using the Dynamic KMP algorithm, independent of the compression of other chunks.

References


Index Terms

Computer Science

Algorithms

Keywords

Lzss kmp culzss gpu gpu