A $12n$ Byte Approach to Speeding up Qsufsort

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Abstract

Suffix arrays are a space-efficient data structure used for string processing. Perhaps the most important application of suffix arrays is in the computation of the Burrows-Wheeler Transform which has uses in data compression and more recently bio-informatics.

This paper suggests changes to qsufsort, a suffix array construction algorithm, with the aim of speeding it up. The modifications proposed maintain qsufsort's worst case time complexity of $O(n\log_2 n)$. Speed-up is achieved by trading space for running time and exploiting radix sorting for faster integer sorting. This speed-up is demonstrated experimentally on real world data.