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**Simple linear work suffix array construction.** (English) [Zbl 1039.68042](#)

Baeten, Jos C. M. (ed.) et al., Automata, languages and programming. 30th international colloquium, ICALP 2003, Eindhoven, The Netherland, June 30 – July 4, 2003. Proceedings. Berlin: Springer (ISBN 3-540-40493-7/pbk). Lect. Notes Comput. Sci. 2719, 943-955 (2003).

Summary: A suffix array represents the suffixes of a string in sorted order. Being a simpler and more compact alternative to suffix trees, it is an important tool for full text indexing and other string processing tasks. We introduce the skew algorithm for suffix array construction over integer alphabets that can be implemented to run in linear time using integer sorting as its only nontrivial subroutine:

1. Recursively sort suffixes beginning at positions  $i \bmod 3 \neq 0$ .
2. Sort the remaining suffixes using the information obtained in step one.
3. Merge the two sorted sequences obtained in steps one and two.

The algorithm is much simpler than previous linear time algorithms that are all based on the more complicated suffix tree data structure. Since sorting is a well studied problem, we obtain optimal algorithms for several other models of computation, e.g. external memory with parallel disks, cache oblivious, and parallel. The adaptations for BSP and EREW-PRAM are asymptotically faster than the best previously known algorithms.

For the entire collection see [\[Zbl 1029.00041\]](#).

**MSC:**

[68P05](#) Data structures  
[68P10](#) Searching and sorting

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