

Space-efficient construction of succinct de Bruijn graphs

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We propose a space-efficient algorithm to compute the succinct representation of the de Bruijn graph introduced in [Bowe et al. WABI 2012]. Given a collection of strings of total length N , we first compute its BWT and (truncated) LCP array in external memory then, executing a single scan of these arrays, we compute the succinct representation of an order- k de Bruijn graph in $O(N)$ time using $O(1)$ words of RAM.

We also describe a new algorithm to merge succinct de Bruijn graphs in $O(mk+n)$ -time, where m is the total number of nodes and n is the total number of edges. Finally, we show how our algorithms can be generalized to Variable Order and Colored succinct representations of de Bruijn graphs.

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