

Cubesort

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Cubesort is a parallel sorting algorithm that builds a self-balancing multi-dimensional array from the keys to be sorted. As the axes are of similar length the structure resembles a cube. After each key is inserted the cube can be rapidly converted to an array.^[1]

A cubesort implementation written in C was published in 2014.^[2]

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Class	Sorting algorithm
Data structure	Array
Worst-case performance	$O(n \log n)$
Worst-case space complexity	$\Theta(n)$

Operation

Cubesort's algorithm uses a specialized binary search on each axis to find the location to insert an element. When an axis grows too large it is split. Locality of reference is optimal as only 4 binary searches are performed on small arrays for each insertion. By using many small dynamic arrays the high cost for insertion on single large arrays is avoided.

References

- Cypher, Robert; Sanz, Jorge L.C (1992). "Cubesort: A parallel algorithm for sorting N data items with S-sorters".
- "Cubesort".

External links

- Cubesort description and implementation in C (<https://sites.google.com/site/binarysearchcube>)
- Algorithms and Computation: 7th International Symposium, ISAAC '96, Osaka ... edited by Tetsuo Asano et al, pp 187-188, <https://books.google.com/books?id=vilOI8JCpFUC&pg=PA188&lpg=PA188&hl=en&f=false> (passing mention)

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Categories: Sorting algorithms | Comparison sorts | Stable sorts | Online sorts | Algorithms and data structures stubs | Computer science stubs

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