07-E-03

Geometric Range Search

kd-Tree: Performance

- Beyond 2D

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kd-Tree

- Can 2d-tree be extended to kd-tree and help higher dimensional GRS?

  If yes, how efficiently can it help?

- A kd-tree in k-dimensional space

  is constructed by

  recursively divide $\mathcal{E}^k$

  along the $1^{st}, 2^{nd}, \ldots, k^{th}$ dimensions

$O(r + n^{1-1/d})$

❖ An orthogonal range query on a set of n points in E^d

- can be answered in $O(r + n^{1-1/d})$ time,
- using a kd-tree of size $O(n)$, which
- can be constructed in $O(n \log n)$ time